U.S Army Corps of Engineers

Intermountain Region

United States Department of Transportation

Federal Highway Administration

Utah Department of Transportation Region 2

June 2005

UDOT REGION 2 WETLAND MITIGATION BANK

Final Banking Instrument

UDOT Project No. SP-0201(5)13

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Location: **Salt Lake County**

Lead Agency: **U.S Army Corp of Engineers**
Bank Sponsor: **Utah Department of Transportation**

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Mitigation Bank Review Team (MBRT):

- US Fish and Wildlife Service
- Utah Division of Wildlife Resources
- Utah Division of Water Rights
- Jordan River Natural Areas Forum
- US Army Corps of Engineers
- United States Environmental Protection Agency
- Utah Division of Forestry, Fire and State Lands

Abstract

The Utah Department of Transportation plans, constructs, and maintains roadway facilities throughout the State of Utah. In Salt Lake County many road facilities impact wetlands and other aquatic resources. When natural resources are impacted by UDOT projects, measures are taken to avoid, minimize, and mitigate for unavoidable impacts.

Roadway projects are linear in nature and generally cross natural resources. The Utah Department of Transportation is committed to improving the natural environment. The following paragraphs were taken from a recent EPA streamlining newsletter praising the Washington State Department of Transportation for their advanced mitigation efforts:

"In 1996, the Washington State Department of Transportation (WSDOT) shifted from mitigating impacts on a project-by-project basis to analyzing mitigation opportunities based on watersheds. Previously, mitigation was designed on a project-by-project basis, irrespective of the top watershed and needs.

The watershed approach is a community based environmental decision-making process that coordinates and integrates human activities to implement watershed recovery efforts and to prevent further degradation of natural resources within large drainage basins. WSDOT targets mitigation investments to sites offering the greatest ecological benefits, a key feature of their approach and promotes partnerships with interested public, private, and non-profit organizations. The watershed approach offers the opportunity to comprehensively plan and offer solutions to achieve economically productive and ecologically sustainable watersheds that are necessary for the well being of all species, habitats, individuals and businesses within the state."

The Utah Department of Transportation has come to the same conclusion and proposes to develop a mitigation bank based on the watershed approach. This approach has focused on the Jordan River Watershed and created a partnership with the Division of Forestry, Fire, and State Lands, the Utah Department of Corrections, the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, the Utah Division of Water Rights, the Utah Department of Wildlife Resources, and local interest groups. The result of the partnership is this document which outlines the details of the Mitigation Banking Instrument and ultimately creates a 25.35-acre mitigation site for UDOT projects that will be a valuable resource for the Jordan River Watershed.

1.0 INTRODUCTION

In 1988 a 252-acre parcel owned by the State of Utah, Department of Corrections was designated as open space. This parcel is located on the eastern banks of the Jordan River in Draper, Utah, north of the Bangeter Highway and south of 12300 South. In 2000 the Utah State Legislature designated the parcel as critical lands and turned ownership and management responsibilities to the Department of Forestry, Fire, and State Lands.

The Department of Corrections utilizes a storm drain into the property that delivers excess water from the Utah State Prison located to the South. The excess water (2-3 cubic feet/ second) comes from a geothermal well and is used for heating purposes at the Prison. Currently the Department of Corrections holds a discharge permit, which allows the excess water to enter the Jordan River without cooling. In November 2005 the existing permit expires and the Department of Corrections will need to cool the water from approximately 106 degrees to 68 degrees before discharging into the Jordan River. This water, along with other sources will be used in the preparation of a water budget for the mitigation site.

The Utah Department of Transportation identified an opportunity to utilize the excess water and develop wetlands on the property owned by the State of Utah and managed by the Department of Forestry, Fires, and State Lands. By creating wetlands in upland areas, and by restoring hydrological function to degraded wetlands, UDOT intends to receive wetland mitigation credits from the U.S Army Corps of Engineers to offset future, unavoidable impacts to wetlands. This Mitigation Banking Instrument will outline the specific natural resource needs filled by the Mitigation Bank and provide the necessary information to approve the final Mitigation Banking Instrument.

Figure 1. The Jordan River borders the site on the west.

2.0 BANK GOALS AND OBJECTIVES

The overall goal of this mitigation bank is to provide economically efficient and flexible mitigation opportunities, while fully compensating for wetland and other aquatic resource losses in a manner that contributes to the long-term ecological functioning of the watershed. The goal includes the need to replace the essential aquatic functions, which are anticipated to be lost through authorized activities within the bank's service area.

The anticipated mitigation need is to develop habitat community types similar to typical impacts that result from UDOT projects. These have been identified as scrub-shrub, emergent marsh, wet meadow, and riparian. In addition to creating habitat types for terrestrial wildlife, the created wetlands will improve water quality. The wetlands will accept the excess water from the Prison at 106 degrees and cool it down below 68 degrees before discharge. This will be done by holding the water in place, mixing with other surface water run-off, and allowing infiltration into the aquifer. Additionally, sedimentation into the Jordan River will be reduced by restoring Corner Canyon Creek to a more stable gradient. The most significant benefit from the Mitigation Bank will be the improved water quality of the Jordan River followed by improved habitat structure for both migratory and non-migratory species, primarily water fowl, upland game birds and neo-tropical migratory birds.

The goal of this mitigation bank is not a commercial endeavor. Rather this bank will mitigate for unavoidable losses for UDOT sponsored projects only. This will include federally and state funded roadway improvement projects as well as local government projects that are managed by UDOT. No credits will be sold.

3.0 OWNERSHIP OF BANK LANDS

The land is owned by the State of Utah and managed by the Department of Forestry, Fire, and State Lands. Specifically, Barry Tripp is the land manager assigned to this parcel. Article 63A-5-222 (Critical land near state prison--Definitions—Preservation as open land—Management and use of land—Restrictions on transfer—Wetlands Development—Conservation easement) specifically outlines the approved uses of the land. Section 5(a) states "Not withstanding Subsection (2)(a)(i), the division or its successor in title to the critical land may develop or allow a public agency or private entity to develop more wetlands on the critical land than exist naturally or existed previously." Finally, Section 8 requires that the land be placed under a "perpetual conservation easement" managed by the State or a reputable land conservation organization.

With the ownership of the bank lands undisputed, and the restrictions already placed on the parcel by the State of Utah, UDOT believes it unnecessary to have fee title to the land or to place additional deed restrictions on the land. Article 63A-5-222 clearly allows for an agency such as UDOT to create and improve wetlands within the parcel and it is reasonable to expect the parcel to remain in ownership of the State of Utah in perpetuity.

4.0 BANK SIZE AND CLASSES OF WETLANDS

The overall acreage of the parcel is 252 acres. Only 25.35 acres will be used as a wetland bank for the foreseeable future. The remaining acreage will be held in a conservation easement and will continue to be managed by the Division of Forestry, Fire and State Lands. Within the 25.35 acres, the following wetland classes will be constructed:

Wet Meadow
At 14.3 acres, this will be largest class of wetland in the mitigation site. This class of wetland will exhibit similar characteristics to existing wetlands on-site. These areas will be periodically inundated with seasonal run-off drying out in summer months. They will primarily support sedges and grasses such as:

Carex nebrascensis (Nebraska sedge)
Carex praegracilis (clustered field sedge)
Carex microptera (small wing sedge)
Eleocharis palustris (common spikerush)
Juncus arcticus (wiregrass)
Distichlis stricta (desert salt grass)
Sporobolus airoides (alkali saccaton)

Emergent Marsh
This wetland class will comprise approximately 6 acres of the wetland bank. This class of wetlands will be created in areas adjacent to the wet meadow and the open water. This class will be the fringe component between the overall matrix of the site supporting:

Carex nebrascensis (Nebraska sedge)
Carex praegracilis (clustered field sedge)
Carex microptera (small wing sedge)
Eleocharis palustris (common spikerush)
Scirpus acutus (hardstem bulrush)
Scirpus americanus (Onley's threesquare)
Scirpus maritimus (alkali bulrush)
Juncus arcticus (wiregrass)
Juncus torreyi (Torrey's rush)

Open Water/Stream Channel
This wetland class will comprise approximately 1.3 acres of the wetland bank. This class of wetlands will be created by reconstructing Corner Canyon Creek and inundating the Galena Canal. This class will be linear in nature supporting emergent marsh and riparian communities on its fringes.

Most of the open water will be found in the restored Galena Canal (1 acre). The breaks in the canal will have the same elevation, effectively impounding the water in canal until

reaching the desired elevation to spill into the wet meadow. This will allow for a constant source of water year round. In the spring, when run-off is high, the Galena Canal will fill quickly and a higher volume of water will enter the wetland from adjacent run-off. This fluctuation will mimic the natural conditions and create a more natural water regime for the wetland bank.

Also found in this class of wetlands is the addition of stream length by reconstructing Corner Canyon Creek. Currently the stream is 475 feet long. The reconstructed stream will be 1455 feet long with increased sinuosity and improved banks stabilization. The existing Corner Canyon Creek will be filled with excavated material after extraction of any historically significant features. The new channel will carry approximately 1/3 of the Corner Canyon Creek flow. Another 1/3 will be diverted south to mix with water in the Galena Canal and the last 1/3 will be diverted to flood the northern portion of the wetland. This classification does not have a vegetation requirement

Riparian
This class will be the most diverse of all the wetland components, and is considered critical for wildlife habitat. Overall 3.75 acres of riparian habitat will be created. This plant community will mostly consist of:

Populous deltoides (Big-leaf cottonwood)
Populous angustifolia (Narrow-leaf cottonwood)
Salix amygdaloides (Peach-leaf willow)
Ribes aureum (Golden currant)
Salix exigua (Coyote willow)
Rosa woodsii (Woods rose)

Upland
Upland islands are an important part of any wetland complex. Upland islands are included in the wet meadow areas and will provide nesting islands for wildlife. These are critical for migratory species during the nesting period. The upland islands are intended to be only 2-3 feet above the wet meadow with gentle transitions. These islands will increase the complexity and diversity of the wetland bank, which in turn will increase its value as wildlife habitat. This plant community will be mixed with the Riparian component providing nesting cover, food cover, and roosting cover. Plant materials will consist of:

Elymus glaucus (blue wildrye)
Elymus lanceolatus (streambank wheatgrass)
Festuca pratensis (meadow fescue)
Muhlenbergia wrightii (spike muhly)

The measurement of upland is included in the Riparian measurement. It will be too fine of a transition between the two plant communities to effectively differentiate between the plant communities.

5.0 DESCRIPTION OF BASELINE CONDITIONS AT THE BANK SITE

Hydrology

Hydrology at the proposed mitigation bank site is influenced mainly by the Jordan River, Corner Canyon Creek and a high water table. The Jordan River has created a half-mile wide flood plain that is roughly 50 feet below the surrounding bluffs. Over the years, the river has created flood plain terraces, oxbows and gravel/sand bars, which are all included in this delineation.

Corner Canyon Creek flows from the east, dissecting the site before it enters the Jordan River. The creek previously flowed over the Galena Canal as part of a milling operation, but the structure has been in ruins for many years. East of the bike path, the creek is in fair condition, however, west of the bike path the creek is highly incised.

The site also has remnants of the Galena Canal. The canal used to be diverted from the Jordan River near the south end of the mitigation site. When the Jordan River flooded in 1983, the diversion structure was destroyed and since that time the canal has not carried water from the Jordan River. The Galena Canal has received some water from Corner Canyon Creek by means of a diversion pipe, but recently the pipe outlet has been clogged with sediment and Reed canarygrass.

Aside from the surface hydrology, the site is also influenced by a high water table. The water table is much deeper south of Corner Canyon Creek. The water table draws closer to the surface the on the north side of the creek and continues to become shallower toward the north end of the delineated area.

Five years of drought have influenced the hydrology at the mitigation site. Several of the test holes did not have saturated soils within 18 inches of the surface even though the test holes were dug in areas supporting obligate wetland vegetation. When performing wetland delineations during this drought period, the Corps has directed us to use a two-parameter approach (vegetation and soils) and not rely on the third parameter of hydrology.

The Department of Corrections is transferring the use of 2 cfs from the East Jordan Canal to be used as a guaranteed water source for the mitigation bank. The water will be diverted out of the canal on the prison property and added into the 8 inch pipe that carries the geothermal water from the prison to the cooling pond. This water will help cool the geothermal water and supply a greater quantity of water to the wetland bank. The canal water is available from April to September. The agreement between UDOT and the Department of Corrections states that in the event the prison moves, UDOT will become the owner of the 2 cfs water right allowing the continued use of the irrigation water in perpetuity (See agreement in Section 3).

Figure 2. Corner Canyon Creek runs through the middle of the site and outlets into the Jordan River. This plunge pool shows a degraded creek west of the trail.

Figure 3. This shows typical wet meadow supported on-site.

Figure 4. This shows the typical stands of wheatgrass, sage and rubber rabbitbrush dominating the proposed mitigation bank site.

Vegetation Communities

Three types of wetland plant communities are found within the project limits. Wet meadows are the dominant wetland plant community consisting mainly of: *Juncus balticus, Distichlis spicata, Mulenbergia asperfolia, Phalaris arundinacea, Conium maculatum, Senecio hydrophilus, Carex microptera* and *Carex nebrascensis*. A few small areas of emergent marsh wetlands occur in old oxbows mainly consisting of: *Typha latifolia* and *Phalaris arundinaecea*, *Scirpus pungens*, *Scirpus acutus,* and *Salix exigua. Elaeagnus angustifolia and Tamarix ramosissima* are the chief species of the riparian shrub-scrub community lining the Jordan River, Corner Canyon Creek and some ditches.

Upland portions of the site are dominated by: *Chrysothamnus nauseosus, Agropyron repens, Cardaria draba, Bromus tectorum,* and an assortment of annual and perennial weedy species (see noxious and invasive species list).

Figure 5. This shows one of the emergent marsh areas. This area is the west boundary of the proposed mitigation site.

Figure 6. Emergent Marsh in a Jordan River Oxbow

Noxious and Invasive Species

The project site supports a variety of both noxious weeds and invasive species. The following is a list of species found on-site, or concerned will invade the site, and are listed on the Utah State Noxious Weed List and considered invasive species in the area. Noxious weeds are required to be controlled by law, invasive species are not required to be controlled by law, but should be controlled to sustain more healthy and divers plant communities. The herbicide recommended, or action to take, to control these species is also listed in the following table. If herbicide is applied, only spot spraying (with backpack or other approved device) is approved as the application method in the wetland mitigation site. The noxious and invasive species are:

Table 1

Utah State Noxious Weeds

(only listed weeds found on-site or concerned with invasion)

Common Name (habitat unit)	Scientific Name	Control
Bindweed (upland)	*Convolvulus spp.*	Dicamba+2,4-d or picloram
Broad-leaved Peppergrass (wet meadow)	*Lepidium latifolium*	glyphosate (Rodeo Aquatic label)
Canada Thistle (wet meadow)	*Cirsium arvense*	glyphosate (Rodeo Aquatic label)
Diffuse Knapweed (upland)	*Centaurea diffusa*	2,4-D+dicamba or picloram or clopyralid
Perennial Sorhgum spp (Johnsongrass) (upland)	*Sorghum halepense, Sorghum Almum*	glyphosate
Musk Thistle (upland)	*Carduus nutans*	2,4-D amine, metsulfuron or picloram
Purple Loosestrife (emergent marsh)	*Lythrum salicarial*	glyphosate (Rodeo Aquatic label)
Quackgrass (wet meadow)	*Agropyron repens*	glyphosate (Rodeo Aquatic label)
Russian Knapweed (upland)	*Centaurea repens*	Picloram or clopyralid or chlorsulfuron

Scotch Thistle (upland)	*Onopordium acanthium*	2,4-D amine, metsulfuron or picloram
Spotted Knapweed (upland)	*Centaurea maculosa*	2,4-D+dicamba, picloram or clopyralid
Squarrose Knapweed (upland)	*Virgata squarrosa*	Picloram
Whitetop (wet meadow)	*Cardaria spp*	glyphosate (Rodeo Aquatic label)
Yellow Starthistle (upland)	*Centaurea solstitalis*	picloram or clopyralid

Additional Invasive Species (potential to invade site)

Common Name	Scientific Name	Herbicide
Water Hemlock (emergent marsh)	*Cicuta maculata*	glyphosate (Rodeo Aquatic label)
Poison Hemlock (emergent marsh)	*Conium maculatum*	glyphosate (Rodeo Aquatic label)
Black Henbane (upland)	*Hyoscyamus niger*	2,4-D+metsulfuron
Silverleaf Nightshade (wet meadow)	*Solanum elaeagnifolium*	glyphosate (Rodeo Aquatic label)
Buffalobur (upland)	*Solanum rostratum*	2,4-D or dicamba
Tamarisk (wet meadow)	*Tamarix ramosissima*	Cut and treat with glyphosate (Rodeo Aquatic label)
Houndstongue (wet meadow)	*Cynoglossum officinale*	glyphosate (Rodeo Aquatic label)
Russian Olive (wet meadow)	*Elaeagnus angustifolia*	Cut and treat with glyphosate (Rodeo Aquatic label)
Puncture Vine (upland)	*Tribulus terrestris*	2,4-D+dicamba
Use rates: Use rates for herbicides vary, follow the use rate on the LABEL for each herbicide		

Water Quality

Corner Canyon Creek currently flows to the west through the site and discharges into the Jordan River. In the summer of 2004, UDOT tested the water quality of Corner Canyon Creek. The results showed Total Dissolved Solids (TDS) of 1600 ppm. At the same time UDOT tested the water piped to the site from the Prison. This is the same water that will be used to inundate the proposed wetland. The results of the water tests for the Prison source showed a TDS of 1600 ppm. Currently the Utah Department of Department of Environmental Quality, Division of Water Quality allows discharges of water with a TDS up to 2000 ppm. It is anticipated that this level will be lowered in 2006 to 1400 ppm. No other indication of a water quality issue were raised by the water tests for Corner Canyon Creek or the source from the Prison.

In the development of the plans for the Mitigation Bank, the MBRT raised the issue of increasing the salinity of the entire site as a result of the water from the Prison having a moderately high TDS. In the book "Water Requirements of Waterfowl Marshlands in Northern Utah" (J.E. Christiansen, J.B Low, Utah Division of Fish and Game, 1970), the water quality of wetlands is thoroughly researched. The researchers determined that optimum water quality for emergent marsh ranges from 840- 1899 ppm. They found that photosynthesis and enzyme production begin to taper off after water quality reaches 3,000 ppm. Emergent marsh species tolerate up to 9,000 ppm. The lowest levels of salinity (TDS) at the Bear Lake Migratory Bird Refuge ranged from 2030 ppm (spring) to 6000 (fall). The lowest averages of tests at the Bird Refuge found water quality to range from 3900 (spring) to 5600 (fall).

The proposed Mitigation Bank will not likely exceed 2,000 ppm. Even when taking into account the water loss due to evaporation, the TDS does not exceed 1,700 ppm (Table 2). With this in mind, UDOT will still test the water quality of the proposed Mitigation Bank at the Galena Canal, the inlet of Corner Canyon Creek into the site and the outlet of the Creek into the Jordan River. These locations should indicate if the overall salinity of the site is increasing.

Geothermal Water

A major premise for proposing this Mitigation Bank is to lower the temperature of the geothermal water used by the Prison Facility as a heat sources and currently discharged to the Jordan River. Eventually the Jordan River is planned to be classed as a cold water fishery. When this status is obtained, water temperatures should be at or below 68.5 degrees. Discharging the geothermal water directly would be contrary to this goal. Currently the water flows from the delivery pipe at a temperature of 106 degrees. In developing a water budget we assumed a water temperature of 110 degrees and an ambient mean temperature of 90 degrees. To reduce the water to the required discharge of 68.5 degrees, an average of 2.8 BTU/hour need to be released to the atmosphere. With the above parameters factored into the equation, anything releasing about 2.8 BTU/hour will be within the required water temperatures. After analysis, the proposed Mitigation Bank site will release 5.8 BTU/hour, even in the hottest part of the summer months. This is because of evaporation of such a large surface area. The BTU's/hour will be even

higher in the winter, spring and fall months with cooler ambient temperatures. The analysis shows that the geothermal water is not a threat to the plant or animal life that will be established at the bank site. Additionally, the geothermal water will no longer be discharged directly into the Jordan River improving the overall water quality from the existing conditions.

Table 2

Mass of TDS mg	Water Lost to Evaporation (l)	TDS of Evapo rtion	Precipitation	TDS of Precipit ation	Outflow	TDS of Outflow (mg/l)	Dry Year TDS of Corner Canyon Creek	Flow of Corner Canyon (l)	Mass of TDS (mg)	New TDS (mg/l)
33562802304	0	0	3084048	0	21730049.28	1544.53	1600	146759040	2.34814E+11	1592.847
32730109344	-6521935	0	2621440.8	0	14282899.48	2291.56	1600	146759040	2.34814E+11	1661.335
30925941264	-7513716	0	1619125.2	0	11286487.35	2740.09	1600	146759040	2.34814E+11	1681.417
30232030464	-8614000	0	1233619.2	0	9415191.68	3210.98	1600	146759040	2.34814E+11	1697.121
30509594784	-7809501	0	1387821.6	0	10528095.75	2897.92	1600	146759040	2.34814E+11	1686.877
31064723424	-5880264	0	1696226.4	0	13074142.53	2376.04	1600	146759040	2.34814E+11	1663.479

6.0 GEOGRAPHIC SERVICE AREA

The geographic service area (figure 8) for the mitigation bank will extend from the inlet of the Jordan River (North portion of Utah Lake, City of Lehi) to the outlet of the Jordan River (Farmington Bay, City of North Salt Lake) into the Great Salt Lake. In Utah County the service area will only be used within ½ mile of the center of the Jordan River, basically encompassing the floodplain and associated wetlands. The service area covers the Jordan River Corridor and extends northward from Lehi to the to the North side of Interstate 80 located south of the Great Salt Lake.

The east and west boundaries will be the foothills of the mountains on each side of Salt Lake County, extending to elevation 5090. The 5090 elevation was chosen based on the historic shoreline of Lake Bonneville. The service area will not extend up into the tributaries of the Jordan River beyond the foothills (elevation 5090). That means the service area does not extend beyond the mouth of the many canyons that enter the Salt Lake and Utah County valleys.

North of I-80 the service area again follows the Jordan River corridor extending ½ mile on each side of the river. All the remaining area in Salt Lake County that is below the 5090 elevation is included in the service area.

7.0 CREDIT AND DEBIT DETERMINATION AND ACCOUNTING PROCEDURES

Credits and debits are the terms used to designate the units of trade (i.e., currency) in this mitigation bank. Credits represent the accrual or attainment of aquatic functions at a bank; debits represent the loss of aquatic functions at an impact or project site.

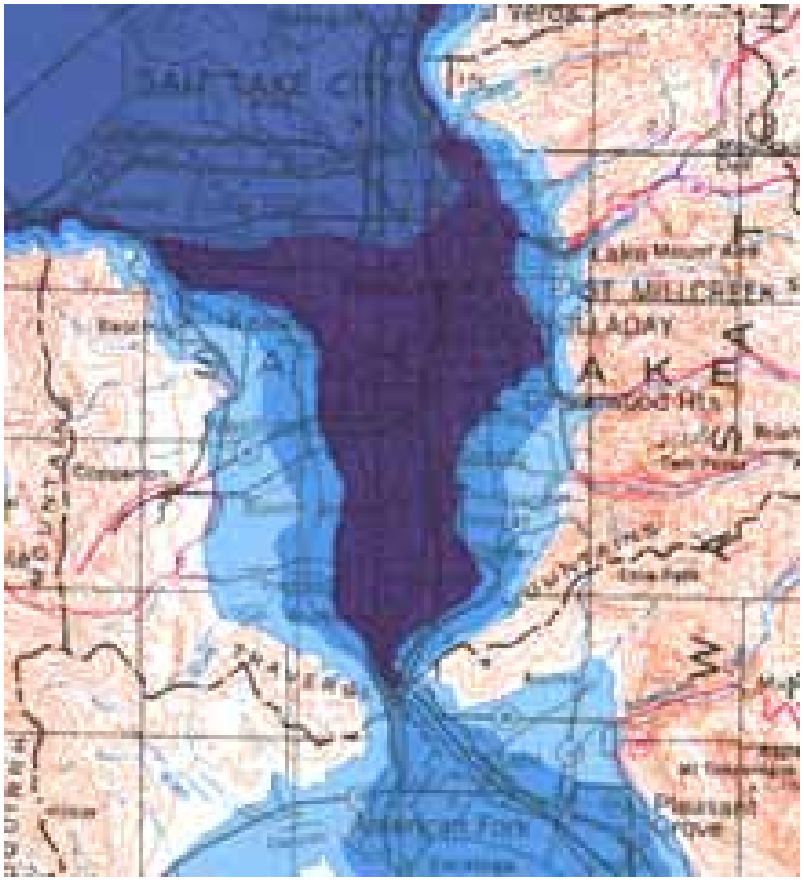


Figure 7. The 2nd lightest blue color is the Lake Bonneville boundary.

Credits are debited from the bank when the project is below the 5090 elevation and they are used to offset unavoidable aquatic resource impacts in the service area. The evaluation method chosen to quantify the number of credits/debits will be based on acreage and habitat type. The credits will be based on the number of acres created or restored that are currently uplands. This bank does not anticipate gaining credit for the preservation of upland acreage because the land is already in a perpetual conservation easement by state statute. This mitigation bank will begin with creating 25.35 acres of wetland, thus having a 25.35-acre credit available when the bank is fully established. There remains the possibility for expansion of the bank, however that will be through another banking instrument in the future if the need arises.

After approval of the Mitigation Banking Instrument, 20% of the credits (5 acres) will be available to use immediately. The remaining 80% (20.35 acres) will become available based on approval of the MBRT as the vegetation establishes. A ledger has been created (Figure 8) to track the credits and debits. The ledger will be updated and submitted annually to the Chair of the MBRT with the Monitoring Report. Each habitat type is listed, the credits and debits per habitat type, and the project that uses the debit will also be listed. Finally the total credits vs. debits will be tallied at the bottom of the columns.

Transaction Information			Debit Amount Acres (HU's)				Ending Balance				
Deposit Received	Entity	Permit Number	Open Water	Riparian/Upland Buffer	Emergent Marsh	Wet Meadow	Open Water	Riparian/Upland Buffer	Emergent Marsh	Wet Meadow	TOTAL ACRES
5-Mar	MBRT	NA	0	0	0	0	1.3	3.75	6	14.3	25.35
Unknown	Build Out	Close	1.3	3.75	6	14.3	0	0	0	0	

Figure 8. Ledger showing the necessary information to track credits and debits from the bank.

UDOT seeks credit for 25.35 acres of created wetland. Approximately 2.7 acres of the existing 5.5 acres of wetlands will be temporarily impacted while the site is constructed. UDOT does not seek credit for improving these wetlands because it would be too difficult to quantify the improvement. Instead these will be in addition to the 25.35 acres of wetlands, but no credit will be given for the improvement.

8.0 PERFORMANCE STANDARDS FOR CREDIT AVAILABILITY AND BANK SUCCESS

One fifth (20%) of the total anticipated credits will become available initially with approval of the Mitigation Banking Instrument. Upon submittal of appropriate documentation by UDOT, and subsequent approval by the Chair and the MBRT, the remaining credits will become available for use following submittal of the Annual Monitoring Plan. The percentage available will be determined by how much wetland has become established based on the procedures outlined in Section 9.0. This process will continue until all the credits in the bank are available or until the MBRT has determined that the maximum number of credits have been established.

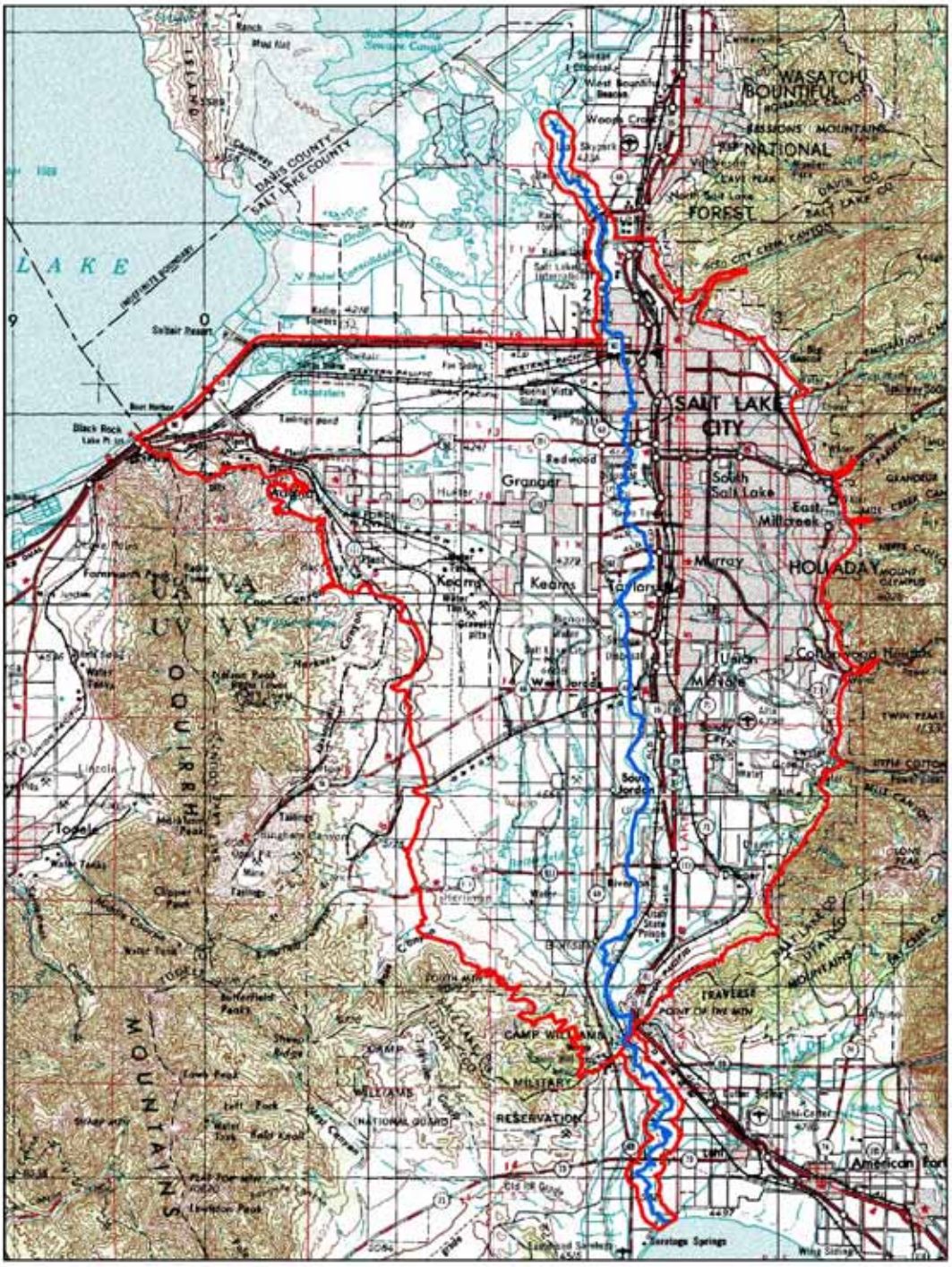


Figure 9. Service area for the proposed mitigation bank.

9.0 REPORTING PROTOCOLS AND MONITORING PLAN

The monitoring period will last for five years, or until success criteria are met, during which time an annual report documenting the development of the mitigation bank will be submitted to the MBRT by November 1. Monitoring, report preparation, and submittal will be the responsibility of UDOT, Region 2 Environmental Unit. The following procedures will be used to document the results of the mitigation bank:

Photographic Documentation

- Photograph the wetland from a sufficient number of locations during the month of July in order to create a complete visual record of the site.

- Install permanent photograph posts to ensure the same height, direction and location are maintained.

- Prepare a photographic key and indicate the location of the photo points, along with arrows indicating the camera direction.

Vegetation Evaluation

- Establish (8) 100 foot transects that bisect the site and typically represent the revegetation plantings along Corner Canyon Creek, the Galena Canal, and the various habitat types. Install a permanent stake at the beginning and end of each transect.

- Using the same plan as the photographic documentation indicating the location of transects.

- Establish survey points at 10-foot intervals along each transect. Using the seeding schedule as a reference, calculate the percentage of ground cover achieved. Also document percentages of other desirable natives as well as undesirable invasive plants. The ground cover estimates will be made using a 1-meter square frame following the Daubenmire ground cover estimation technique.

Monitoring Report

- Average the plant survey points along each transect to determine the percent coverage of original planted species. Report on how the site is progressing toward the following performance standard:

    - Ground covers; Revegetation efforts will continue until at least 80 percent of the ground is covered and greater than 50 percent of the original planted species are established and persisting on the site. The ground cover will

be documented using a one-square meter measuring template. The observer will measure the amount of cover based on the method developed by Daubenmire (1969) for estimating percentage of ground cover.

- Woody vegetation; Revegetation efforts will continue until at least 70 percent survival for each of the species planted is documented. The survival rate will be based on physically counting the number of trees and shrubs present in the mitigation area. No invasive woody species will be included in the percent survival.

- Report on how the wetland hydrology and water budget is functioning on the mitigation site. Include TDS test results for the Galena Canal, inlet of Corner Canyon Creek into the mitigation site and the outlet of Corner Canyon Creek into the Jordan River. Piezometers will be monitored throughout the growing season and charted on a graph showing the fluctuations of the water table. The piezometers will be used to establish the success of the hydrology.

- Discuss the degree of success in replacing wetland functions lost to the permitted activity using the Functional Assessment Method currently under evaluation by UDOT and the Corps of Engineers.

- Discuss unacceptable facets of the mitigation site and whether or not they are possible to correct. Discuss maintenance procedures that could remedy problems. If it is not possible to bring the condition in to compliance with the plan, then discuss alternative strategies to salvage the project that would make it successful.

- Provide a site map showing wetland types, open water, transect locations and photo points and directions.

- After success criteria is met, annual reporting will continue until bank closure.

10.0 CONTINGENCY AND REMEDIAL ACTIONS AND RESPONSIBILITIES

In the event the Bank fails to achieve the Success Criteria UDOT shall develop a contingency plan and implement the appropriate remedial actions for the Bank in coordination with the MBRT. If UDOT fails to implement the remedial action within 90 days, debiting of credits will immediately cease. If remedial actions are not taken for the space of 1 years from the time of written notification, UDOT will pay an in-lieu-fee (ILF) to a pre-approved organization in the amount of fair market value for current wetland credits. Fair market value will be determined by the U.S. Army Corps of Engineers at the time of non-compliance.

11.0 FINANCIAL ASSURANCES

Because UDOT is a Public Agency no Endowment Fund or other type of bonding is required. UDOT does not intend to sell credits from the Bank to 3rd party developers or other state or federal agencies. UDOT reserves the right to use available credits for transportation project supported by local governments that are funded through UDOT. As stated earlier, any debiting of credits from the Bank for legitimate projects will need to be approved by the Chair of the MBRT.

12.0 COMPENSATION RATIOS

The design of the bank is to create 25.35 acres of wetland plant communities. Existing on-site are 5.5 acres of wetlands (.2 acres Riparian, .34 acres Emergent Marsh, 5.0 acres Wet Meadow). Although some of the existing wetlands will be temporarily impacted during construction (2.7 acres), ultimately they will mesh with the created wetlands. The grading plan has tied the new wetlands into the existing wetlands. Existing wetland acreage has been subtracted from the overall acreage and is not included in the 25.35 acres of credit. When the bank is fully established 28 acres (25.35 acres created + 2.7 acres existing) of wetland will be protected as the wetland bank.

Past UDOT projects have typically mitigated unavoidable impacts at a minimum 3:1 ratio. Sometimes higher based on local conditions and proximity of the mitigation site to the impact location. Mitigation ratios for banks have typically been 1:1 for creation and 3:1 for enhancement of existing wetlands. UDOT is seeking a mitigation ratio of 1:1 for creation of wetland habitat and is not seeking credit for the enhancement of the existing wetlands. Undoubtedly the existing wetlands will be enhanced, but the acreage is minor and difficult to establish the level of enhancement. Therefore the 1:1 ratio for the created wetland is sufficient and determined fair and equitable by the MBRT.

13.0 PROVISIONS FOR LONG-TERM MANAGEMENT, MAINTENANCE AND BANK CLOSURE

Long-term management of the mitigation bank site is under the direction of the State Division of Forestry, Fire, and State Lands (FFSL). Management of the site will be turned back to FFSL upon closure of the bank. This will occur no sooner than 25 years from the date of the Interagency Agreement (2005, attached in Appendix 8). Until bank closure, UDOT is responsible for management and maintenance of the mitigation bank site. Overall property management is still the responsibility of FFSL.

The bank will be closed on the date that all the following conditions have been met:

1. The wetlands have been fully established and the last authorized bank credit has been transferred.

2. The Sponsor (UDOT) notifies the MBRT in writing that credits are no longer available from the bank.

3. FFSL agrees in writing that the Interagency Agreement has been fulfilled and is no longer necessary.

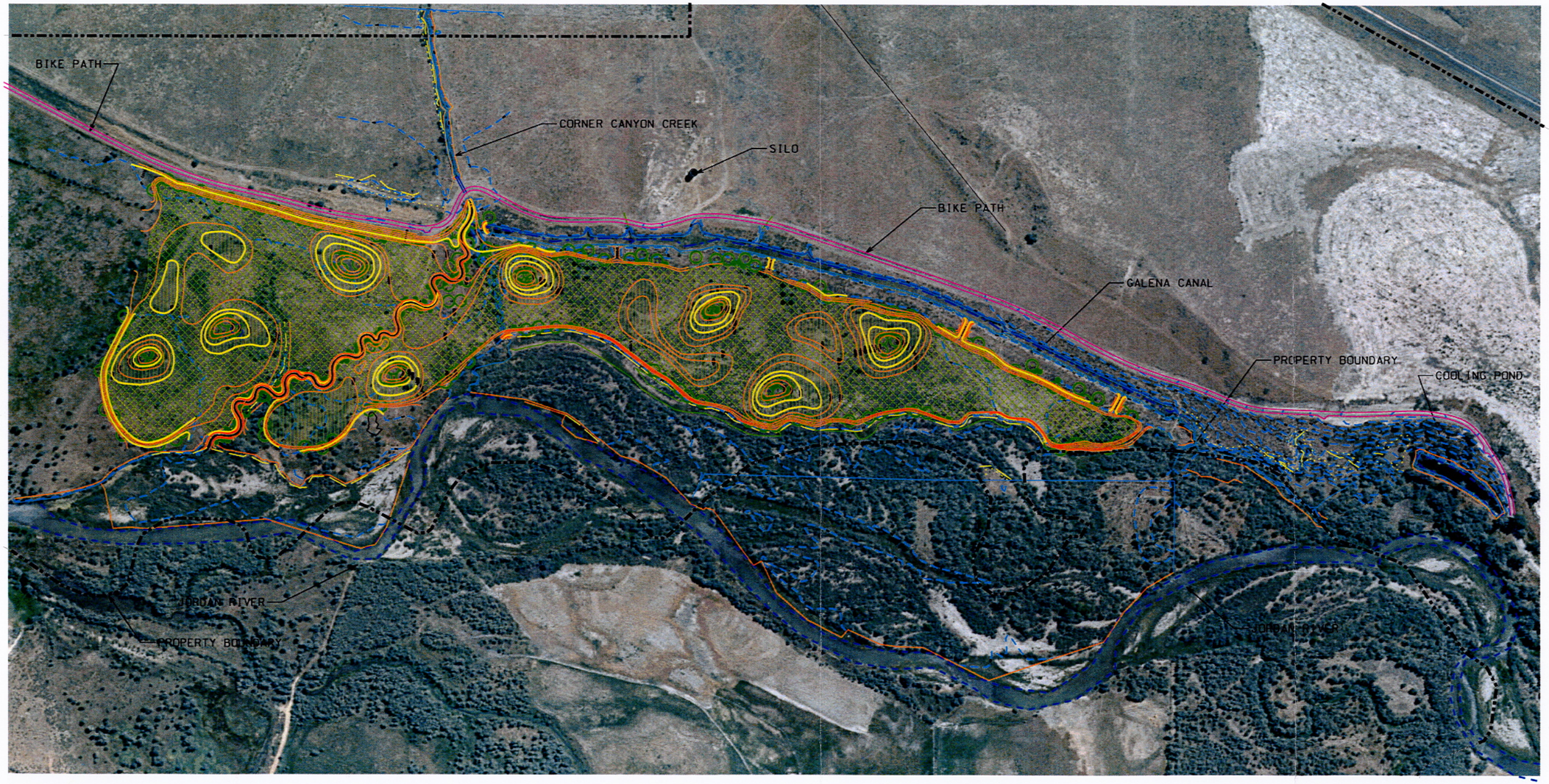
Figure 10. Pipes carry Corner Canyon Creek under the bike path.

Figure 11. Corner Canyon Creek is head cutting and the banks severely eroding due to previous straightening of the channel.

Figure 12. Water from this cooling pond will be diverted into the new wetland instead of discharging directly into the Jordan River.

Figure 13. Overview of the proposed mitigation site.

Figure 14. This diversion point shows the water coming from the Dept. of Corrections. This point will be closed to divert the water to the wetland.



MITIGATION SITE CONCEPT PLAN

UTAH DEPARTMENT OF TRANSPORTATION
REGION TWO -- PRECONSTRUCTION
LANDSCAPE DESIGN

WETLAND MITIGATION
BANK--DRAPER, UTAH

PROJECT NUMBER SP-0201(5)13

SALT LAKE COUNTY

SHEET NO. _____

REVIEW
DESIGN _____ CHECK _____
DRAWN _____ CHECK _____ DATE _____
QUANT. _____ CHECK _____ BY _____

APPROVAL RECOMM. DATE _____ PROJ. LANDSCAPE ARCHITECT
APPROVED DATE _____ PRECONSTRUCTION ENGINEER

REVISIONS

NO.	DATE	REMARKS
		DESIGN MAPS, PARCELS REQUEST REVISED BY ATTORNEY GENERAL
		ORIGINAL SUBMISSION FOR AUTHORIZATION

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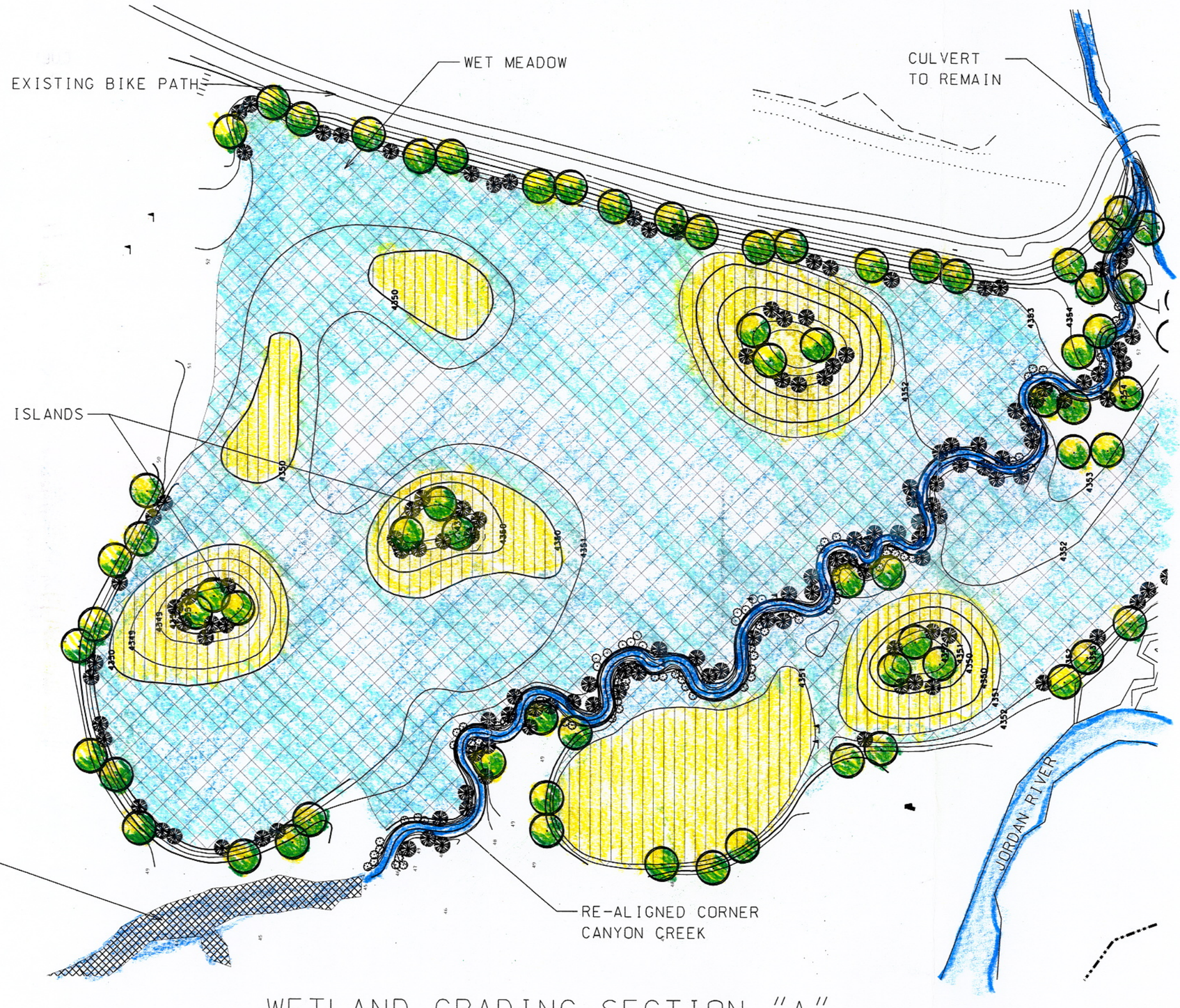

WETLAND GRADING SECTION "A"

NO.	DATE	REMARKS
		DESIGN MAPS, PARCELS, REQUEST REVISED CORR. BY APPLICANT BY
		ORIGINAL SUBMISSION FOR AUTHORIZATION
	DATE	REVISIONS

UTAH DEPARTMENT OF TRANSPORTATION
REGION TWO -- PRECONSTRUCTION
LANDSCAPE DESIGN

REVIEW

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DRAWN ____ CHECK ____
QUANT. ____ CHECK ____

APPROVAL RECOMM. ____ DATE ____ PROJ. LANDSCAPE ARCHITECT
APPROVED ____ DATE ____ PRECONSTRUCTION ENGINEER

WETLAND MITIGATION
BANK--DRAPER, UTAH
GRADING PLAN

PROJECT NUMBER SP-0201(5)13

SALT LAKE COUNTY

SHEET NO. 1 OF 6

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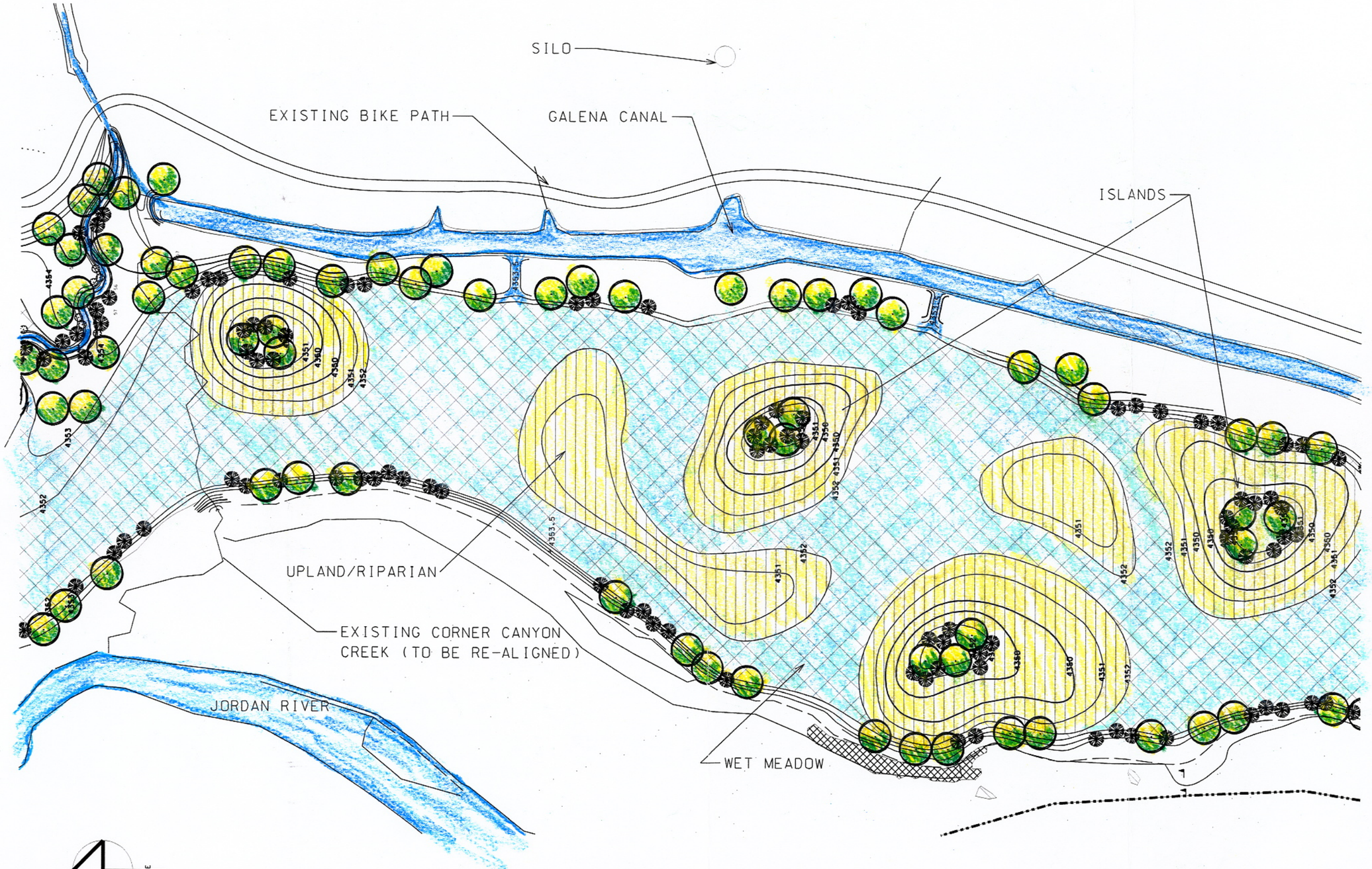

WETLAND GRADING SECTION "B"

NO.	DATE	DESIGN REV. BY	MAPS CORR. BY	PARCELS AFFECTED	REQUEST BY	REMARKS
		ORIGINAL SUBMISSION FOR AUTHORIZATION				

REVISIONS

UTAH DEPARTMENT OF TRANSPORTATION
REGION TWO -- PRECONSTRUCTION
LANDSCAPE DESIGN

DESIGN ____ CHECK ____ REVIEW
DRAWN ____ DATE ____ CHECK ____
QUANT. ____ BY ____ CHECK ____

APPROVAL RECOMM. ____ DATE ____ PROJ. LANDSCAPE ARCHITECT
APPROVED ____ DATE ____ PRECONSTRUCTION ENGINEER

WETLAND MITIGATION
BANK--DRAPER, UTAH
GRADING PLAN

PROJECT NUMBER SP-0201(5)13

SALT LAKE COUNTY

SHEET NO. 2 OF 6

WETLAND GRADING SECTION "C"

UTAH DEPARTMENT OF TRANSPORTATION
REGION TWO -- PRECONSTRUCTION
LANDSCAPE DESIGN

REVIEW
CHECK
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NO.	DATE	DESIGN REV. BY	MAPS CORR. BY	PARCELS AFFECTED	REQUEST BY	REMARKS
	DATE	ORIGINAL SUBMISSION FOR AUTHORIZATION				

REVISIONS

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APPROVED DATE PRECONSTRUCTION ENGINEER

WETLAND MITIGATION
BANK--DRAPER, UTAH
GRADING PLAN

PROJECT NUMBER SP-0201(5)13

SALT LAKE COUNTY

SHEET NO. 3 OF 6

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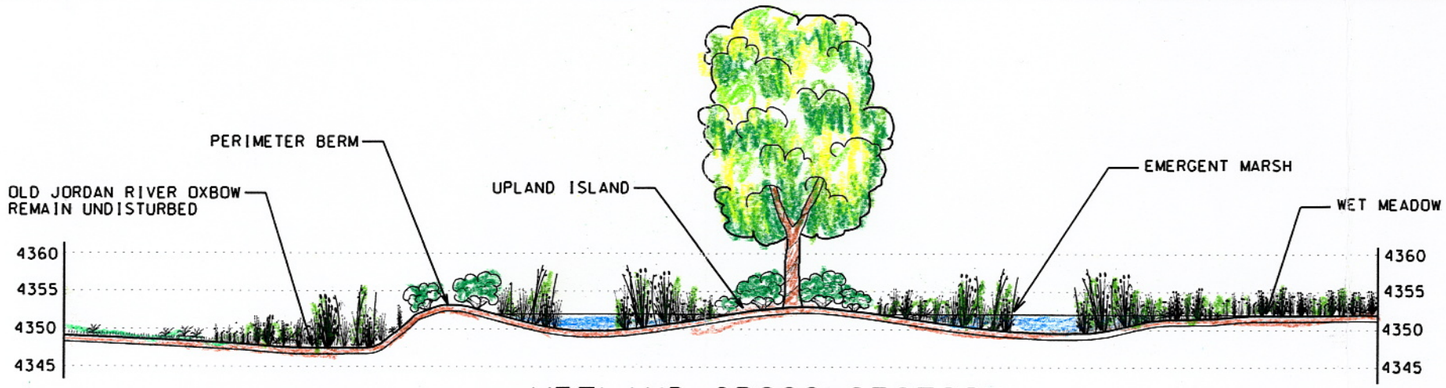
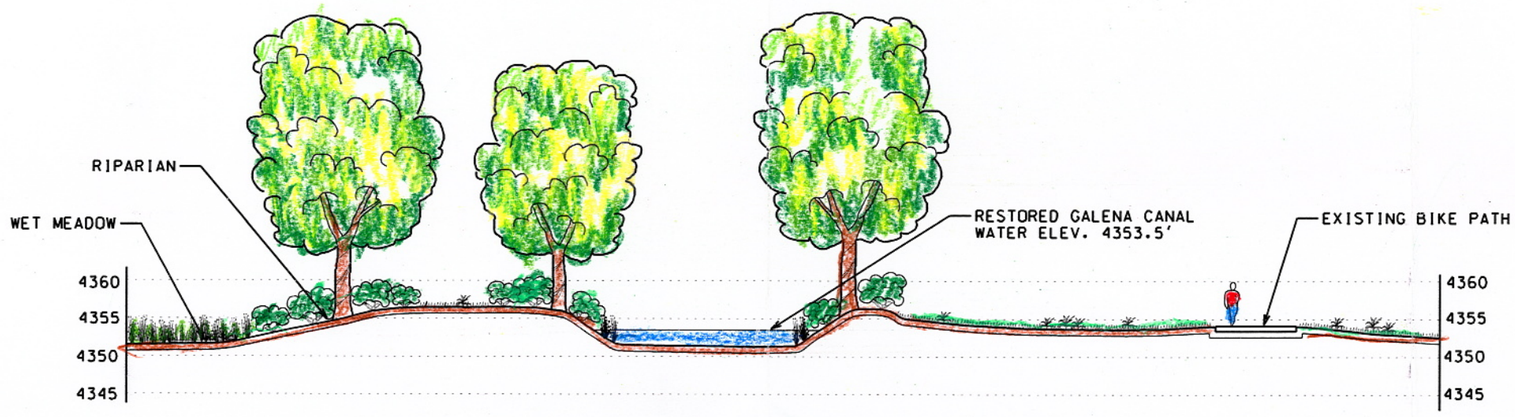
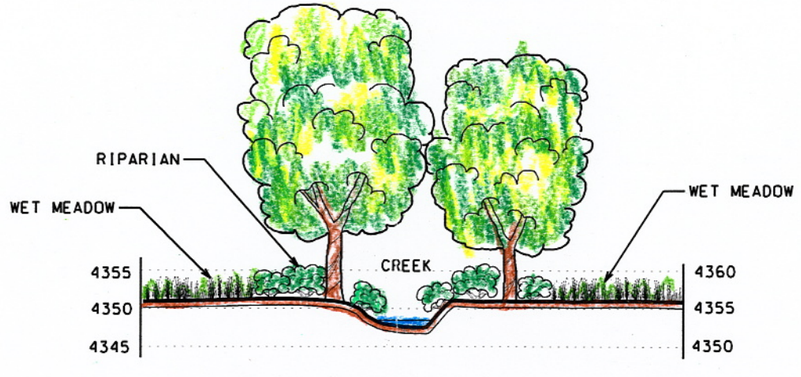


WETLAND CROSS SECTION



GALENA CANAL CROSS SECTION



CORNER CANYON CREEK CROSS SECTION

NO.	DATE	DESIGN REVISION	MAPS CORR.	PARCELS AFFECTED	REQUEST BY	REMARKS
	DATE	ORIGINAL SUBMISSION FOR AUTHORIZATION				

REVISIONS

UTAH DEPARTMENT OF TRANSPORTATION
REGION TWO -- PRECONSTRUCTION
LANDSCAPE DESIGN

REVIEW
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DESIGN ____
DRAWN ____
QUANT. ____

APPROVAL RECOMM. ____ DATE ____ PROJ. LANDSCAPE ARCHITECT
APPROVED ____ DATE ____ PRECONSTRUCTION ENGINEER

WETLAND MITIGATION
BANK--DRAPER, UTAH
CROSS SECTIONS

PROJECT NUMBER SP-0201(5)113

SALT LAKE COUNTY

SHEET NO. ____

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WETLAND DELINEATION REPORT

for
Utah Department of Transportation
Region Two
2010 South 2760 West
Salt Lake City, Utah 84104

Project Name:
Galena Wetland Mitigation Bank

Authorized Agent: Lars Anderson 887-3470
Prepared by: Terry Johnson 965-4598

June 2004

PROJECT DESCRIPTION

The Utah Department of Transportation is pursuing the development of a wetland mitigation bank. The site of the proposed bank is located between the Jordan River and the abandoned Galena Canal in the vicinity of Corner Canyon Creek (South west quarter of Section 35, Township 3S, Range 1W, UTM (NAD27)= zone 12, 422670mE, 4484460mN. Because there are existing wetlands on the site, we are conducting a delineation to identify the various types of wetlands, determine their condition, and have them surveyed and mapped to aid us with the development of the mitigation bank prospectus.

Access to the site is by means of the Salt Lake County bike /pedestrian path from either the trial head near the Jordan River and 12300 South and proceed south for approximately one mile or from the south by parking on the north west end of the Bangerter Highway bridge over the Jordan River and proceed north on the path for approximately one mile.

The delineation has been conducted in accordance with the 1987 "Corps of Engineers Wetlands Delineation Manual" and is being submitted to the Corps for verification and approval.

SURVEYED PROJECT ACREAGE

The proposed mitigation bank is located on a 252-acre parcel owned by the State of Utah managed by the Department of Forestry, Fire and State Lands (FFSL) and has been set aside by a legislative statute as open space. The wetland delineation was limited to 70 acres mainly located between the Galena Canal and the western property line.

The chart below indicates the types of Waters of the U.S. and specific wetland types occurring on the project and the total acres for each type.

Wetland Types within the Project Limits			
Ephemeral Stream/Riparian	Emergent Marsh	Wet Meadow	Open Water/ Cooling Pond
0.20 acres	0.34 acres	5.018 acres	0.25 acres

EXISTING CONDITIONS

Hydrology

Hydrology at the proposed mitigation bank site is influenced mainly by the Jordan River, Corner Canyon Creek and a high water table. The Jordan River has created a half-mile wide flood plain that is roughly 50 feet below the surrounding bluffs. Over the years, the river has created flood plain terraces, oxbows and gravel/sand bars, which are all included in this delineation.

Jordan River

Corner Canyon Creek

Corner Canyon Creek flows from the east, dissecting the site before it enters the Jordan River. The creek used to flow over the Galena Canal as part of a milling operation, but the structure has been in ruins for many years. East of the bike path, the creek is in fair condition, however, west of the bike path the creek is highly incised.

The site also has remnants of the Galena Canal. The canal used to be diverted from the Jordan River near the south end of the mitigation site. When the Jordan River flooded in 1983, the diversion structure was destroyed and since that time the canal has not carried water from the Jordan River. The Galena Canal has received some water from Corner Canyon Creek by means of a diversion pipe, but recently the pipe outlet has been clogged with sediment and reed canarygrass.

Galena Canal North of Corner Canyon Creek

Galena Canal South of Corner Canyon Creek

Aside from the surface hydrology, the site is also influence by a high water table. The water table is much deeper south of Corner Canyon Creek. The water table draws closer to the surface the on the north side of the creek and continues to become shallower toward the north end of the delineated area.

Five years of drought have influenced the hydrology at the mitigation site. Several of the test holes did not have saturated soils within 18 inches of the surface even though the test holes were dug in areas supporting obligate wetland vegetation. When performing wetland delineations during this drought period, the Corps has directed us to use a two-parameter approach (vegetation and soils) and not rely on the third parameter of hydrology.

Vegetation Communities

Three types of wetland plant communities are found within the project limits. Wet meadows are the dominant wetland plant community consisting mainly of: *Juncus balticus, Distichlis spicata, Mulenbergia asperifloia, Phalaris arundinacea, Conium maculatum, Senecio hydrophilus, Carex microptera* and *Carex nebrascensis*. A few small areas of emergent marsh wetlands occur in old oxbows mainly consisting mainly of: *Typha latifolia* and *Phalaris arundinaecea, Scirpus pungens*, *Scirpus acutus,* and *Salix exigua. Elaeagnus angustifolia and Tamarix ramosissima* are the chief species of the riparian shrub-scrub community lining the Jordan River, Corner Canyon Creek and some ditches.

Emergent Marsh in a Jordan River Oxbow

Wet Meadow Plant Community

Upland portions of the site are dominated by: *Chrysothamnus nauseosus, Agropyron repens Cardaria draba, Bromus tectorum,* and an assortment of annual and perennial weedy species.

The most common plant species and their indicator status are listed in Table 1.

Table 1. Dominant Plant Species

Botanical Name	Common Name	Indicator Status
Agrpyron elongatum	Tall wheatgrass	UPL
Agropyron intermedium	Intermediate	UPL
Agropyron repens	wheatgrass	FACU
Agrostis stolonifera	Quackgrass	FACW
Apocynum cannabinum	Redtop bentgrass	FAC
Arctium minus	Hemp dogbane	UPL
Asclepias speciosa	Common burdock	FACW

Aster chilensis	Showy milkweed	FACU
Bromus inermus	Common aster	UPL
Bromus tectorum	Smooth brome	UPL
Cardaria draba	Downy brome	UPL
Carduus nutans	Whitetop	UPL
Carex microptera	Musk thistle	FAC
Carex nebrascensis	Small-wing sedge	OBL
Chenopodium album	Nebraska sedge	FACU
Chrysothamnus nauseosus	Lambsquarter	UPL
Conium maculatum	Rubber rabbitbrush	FACW
Conyza Canadensis	Poison hemlock	UPL
Crataegus douglasii	Horseweed	FAC
Crisium arvense	Douglas hawthorn	FACU
Crisium vulgare	Creeping thistle	FAC
Deschampsia caespitosa	Bull thistle	FACW
Dipsacus sylvestris	Tufted hairgrass	NI
Distichlis spicata	Common teasel	FAC+*
Elaeagnus angustifolia	Saltgrass	FAC
Erodium cicutarium	Russian olive	UPL
Epilobium ciliatum	Redstem filaree	FAC
Equisetum laevigatum	Hairy willow-herb	FACW
Grindelia squarrosa	Smooth scouringrush	FACU
Hordeum jubatum	Curlycup gumweed	FAC*
Hordeum leporinum	Foxtail barley	NI
Juncus balticus	Hare barley	FACW
Lepidium perfoliatum	Baltic rush	FACU-
Malva neglecta	Clasping pepperweed	UPL
Mentha arvensis	Common mallow	FACW
Muhlenbergia asperifolia	Field mint	FACW+
Onopordum acanthium	Scrathgrass	UPL
Panicum capillare	Scotch thistle	FACU
Phalaris arundinaecea	Witchgrass	OBL
Phleum pratensis	Reed canary grass	FACU
Phragmities australis	Timothy	FACW+
Poa bulbosa	Commom reedgrass	UPL
Poa pratensis	Bulbous bluegrass	FACU
Polygonum aviculare	Kentucky bluegrass	UPL
Populus angustifolia	Prostrate knotweed	FAC*
Potentilla anserina	Narrowleaf cottonwood	OBL
Ranunculus cymbalaria	Common silverweed	OBL
Ranunculus testiculatus	Seaside buttercup	UPL
Rosa woodsii	Bur buttercup	FAC-
Rumex crispus	Wood□s rose	FACW
Sarcobatus vermiculatus	Curly dock	FACU*
Salix exigua	Greasewood	OBL
Scirpus acutus	Coyote willow	OBL
Scirpus pungens	Hard-stem bulrush	OBL
Senecio hydrophilus	Three-square bulrush	OBL
Sitanion hystrix	Water groundsel	UPL
Sonchus oleraceus		

Tamarix ramosissima	Squirreltail	UPL
Taraxacum spp.	Common sow-thistle	FACW
Thlaspi arvense	Tamarisk	FACU+
Triglochin maritimum	Dandelion	NI
Typha latifolia	Field penny-cress	OBL
Urtica dioica	Arrow grass	OBL
	Broad-leaf cattail	FAC
	Stinging nettle	

Soils

Of the soils occurring within the site limits, there are two soil series and two land types identified. One of the series is on Utah's hydric soils list, while the other series and the two land types have hydric inclusions.

Hydric Soil Samples

Magna silty clay (Mc): The Magna series is on the hydric soils list. These soils are generally very poorly drained with a water table at or near the ground level during part of the growing season. These soils occur on flood plains adjacent to the Jordan River, and generally in old oxbows. In the representative profile, the surface layer is very dark-gray (moist) silty clay loam about 12 inches thick. The underlying area of strong lime accumulation is dark-gray (moist) silty clay about 16 inches thick. On the site, the Magna series occurs between the Jordan River and the Galena Canal just north of Corner Canyon Creek and continues north to the surveyed boundary. See Figure 2 for soil map.

Chipman silty clay loam (Ck): This soil series consists of poorly drained soils along the Jordan River flood plains. In the representative profile the surface is very dark-gray to black (moist) light silty clay loam about 16 inches thick. The underlying layer is a gray (moist) light silty clay loam. Mottles and gley colors occur within 40 inches of the surface. On the site, the Chipman series occurs between the high flood plain of the Jordan River and the Galena Canal and starts about 400 feet south of Corner Canyon Creek and continues south to the surveyed boundary.

Mixed Alluvial Land (Mu): This soil is a miscellaneous land type that consists of somewhat poorly drained and poorly drained, highly stratified alluvium. It is subject to frequent flooding. Texture ranges from sand to clay with common gravel strata. Mottles occur within 30 inches of the surface. On the site, mixed alluvial land occurs along both sides of Corner Canyon Creek.

Stony Alluvial Land (St): This soil is a miscellaneous land type that consists of somewhat poorly drained and poorly drained gravelly, cobbly or stony alluvium. The material is stratified, but it has cobblestones or stones on the surface in most cases and cobblestones, stones and gravel throughout the profile. The water table is within 40 inches of the surface during part of each year. On the site, it occurs along the Jordan River flood plain.

Figure 2. Soils Map

WETLAND DELINEATION

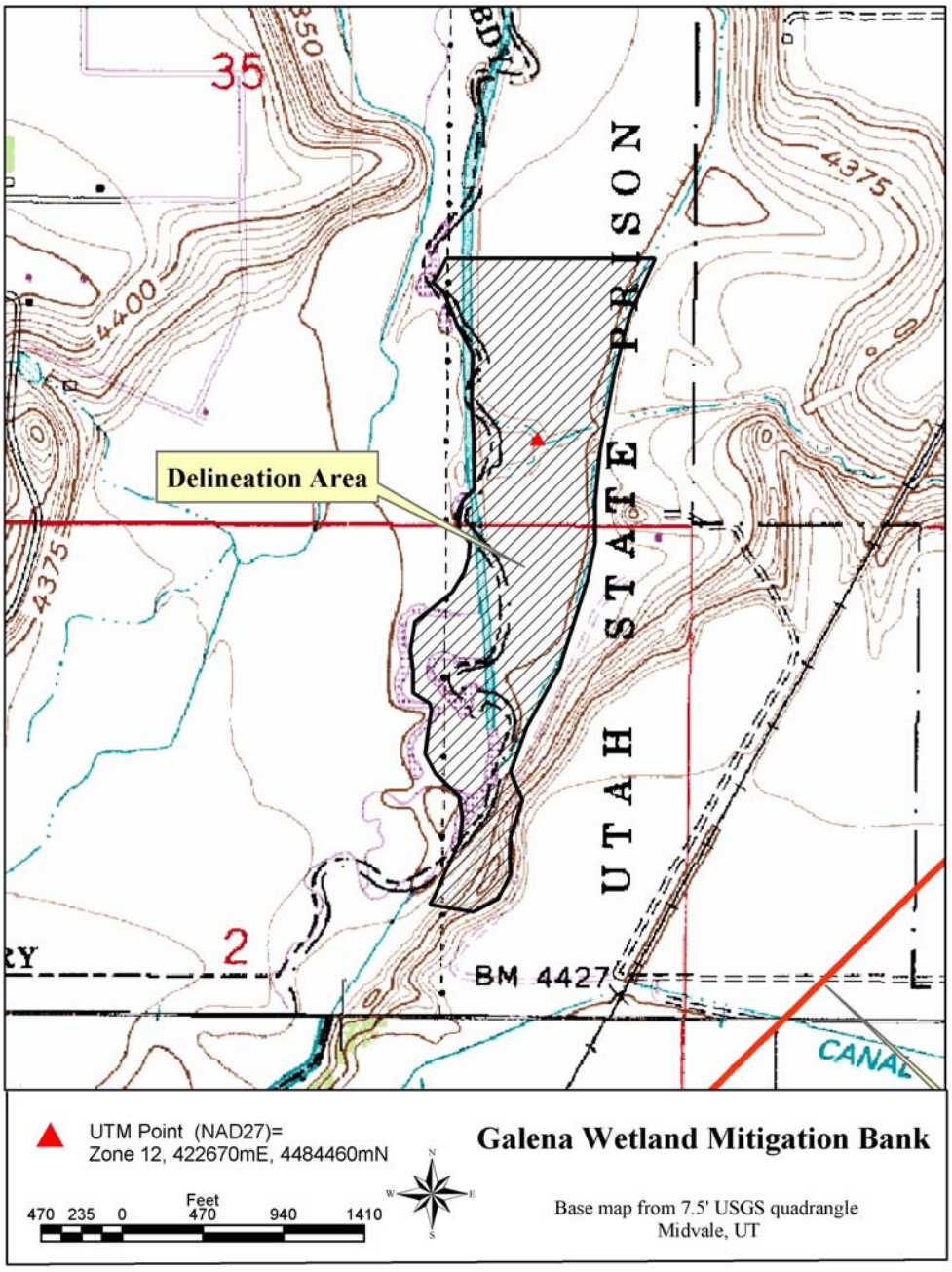
The wetland delineation has been conducted in accordance with the 1987 Corps of Engineers Wetland Delineation Manual. The delineation is confined to the surveyed limits of the project site. 20 data points were sampled throughout the project site with the premise of having one data point on the wetland side of the delineation line and one data point on the upland side. Some additional data points were surveyed in wetland areas to verify hypotheses. The wetland data

forms documenting the vegetation, soils and hydrology are attached.

Defining wetland boundaries throughout the site was difficult due to a couple of factors: First, drought over the past five years has influenced hydrology; Second, with the drier conditions, invasive upland species are becoming more prevalent and are encroaching upon the more desirable wetland species; Third, the flat topography creates very subtle transitions between wetlands and uplands; Forth, alluvial soils are highly stratified with varying layers of sands and silty clays.

Wetland boundaries were mainly determined by identifying where the dominate wetland vegetation transitioned to upland dominates. Some of these transition wetland species included; juncus balticus, carex microptera, conium maculatum, and distichlis spicata. As these facultative and facultative wetland species switched to upland species, the boundary was defined. Where there was enough difference in topography to develop drainage patterns, these areas were also helpful in determining wetland boundaries.

Appendix A contains USGS map of the area, Appendix B contains an overall site plan and four larger scale plan sheets that identify the jurisdictional wetland locations and sample points, and Appendix C contains the data sheets for each of the sample points.


35
4400
4375
Delineation Area
UTAH STATE PRISON
2
BM 4427
CANAL
UTM Point (NAD27)=
Zone 12, 422670mE, 4484460mN
Galena Wetland Mitigation Bank
470 235 0 Feet 470 940 1410
Base map from 7.5' USGS quadrangle
Midvale, UT

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

REPLY TO
ATTENTION OF

August 27, 2004

Regulatory Branch (200050047)

Lars Anderson
Region Two Environmental Manager
Utah Department of Transportation
2010 South 2760 West
Salt Lake City, Utah 84104

Dear Mr. Anderson:

We are responding to your request for an approved jurisdictional determination for the UDOT Galena Wetland Mitigation Bank site. This approximately 70-acre site is located along the east side of the Jordan River between 12300 South and Bangerter Highway in Bluffdale. The site is further located within a portion of Section 35, Township 3 South, Range 1 West, SLB&M, Salt Lake County, Utah.

Based on available information and a site inspection by Anna Sutton of this office, we concur in the estimate of waters of the United States as depicted on the UDOT Region Two - Preconstruction drawings, **Mitigation Site Wetland Delineation and Sections A through D, Revisions**. Approximately 5.808 acres of waters of the United States, including wetlands, are present within the survey area. These waters are regulated under Section 404 of the Clean Water Act since they are adjacent and tributary to the Jordan River, a tributary to a water of the United States, in accordance with 33 CFR 328.3 (a)(5) and (7).

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. A *Notification of Administrative Appeal Options and Process and Request for Appeal* form is enclosed. If you wish to appeal this approved jurisdictional determination, please follow the procedures on the form. You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

Please refer to identification number 200050047 in any correspondence concerning this project. If you have questions, please contact Anna Sutton at the Utah

Regulatory Office, 533 West 2600 South, Suite 150, Bountiful, Utah 84010-7744, email *Anna.M.Sutton@usace.army.mil*, or telephone 801-295-8380, extension 16.

Sincerely,

Amy L. Defreese for

Nancy Kang
Chief, Utah Regulatory Office

Enclosures

Copies furnished:

Terry Johnson, Utah Department of Transportation, Central Environmental Division Box 148450, 4501 South 2700 West, Salt Lake City, Utah 84114-4564
Dave Ruiter, U.S. Environmental Protection Agency, Region VIII (8EPR-EP), 999 Eighteenth Street, Suite 300, Denver, Colorado 80202-2466
Doug Sakaguchi, Utah Division of Wildlife Resources, Central Region Office, 1115 North Main, Springville, Utah 84663
Lucy Jordan, U.S. Fish and Wildlife Service, Utah Field Office, 2369 West Orton Circle, Suite 50, West Valley City, Utah 84119

United States Department of the Interior

FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119

In Reply Refer To
FWS/R6
ES/UT

March 15, 2004

Mr. Lars Anderson
Region Environmental Manager
Utah Department of Transportation
2010 South 2760 West
Salt Lake City, Utah 84104-4592

RE: Mitigation Bank at State Prison Property

Dear Mr. Anderson:

We appreciate the opportunity to be a member of the Mitigation Bank Review Team and to be involved in the development of a Utah Department of Transportation (UDOT) mitigation bank. We support the mitigation bank plan because of the benefits to wildlife of one large mitigation area as opposed to many small, disconnected sites. The former Utah State Prison property that has been selected as the potential bank site, on the east side of the Jordan River north of Bangerter Highway, is an ecologically important area with many potential restoration opportunities. It should provide many benefits for fish and wildlife utilizing the Jordan River corridor. We believe this bank will be suitable to compensate for wetland wildlife impacts in the Salt Lake valley from the Narrows area of the Jordan River to I-80 on the north, and from the Oquirrh Mountain foothills on the west to the lower east bench area of the Wasatch Mountains on the east. We anticipate that wetland wildlife impacts from the proposed State Highway 201 expansion and Mountain View Highway (the portion in Salt Lake County) could be compensated at the Utah State Prison property mitigation bank.

We also look forward to working with UDOT to develop future wetland mitigation banks, particularly banks in Utah County to service Utah Lake and tributary wetland impacts. This concept has been discussed for some years but not yet implemented. We believe that potential impacts from the Utah County portion of the Mountain View Highway and I-15 expansion in the northern portion of Utah County could be appropriately compensated by a mitigation bank established along the north shore of Utah Lake. There are already several mitigation properties there and therefore there is an opportunity to link them into a meaningful wetland/wildlife conservation area. Similarly, we believe that a bank developed either along tributaries or along the south shore of Provo Bay could compensate for I-15 expansion from Orem southward and other road projects in that area. Again, there are already wetland/wildlife conservation areas established and priority areas identified that could guide configuration of a bank in that area.

Both Great Salt Lake and Utah Lake wetlands are very important for wildlife, especially migratory birds, although their wetland habitat characteristics are somewhat different. By establishing banks in both areas, we have the opportunity to compensate in ecologically similar areas and in the same sub-watersheds as where wetland impacts occur. This will avoid the very undesirable alternative of substituting wetland impacts in one sub-watershed for mitigation in another, when both are so important to wildlife.

We look forward to reviewing plans for the Utah State Prison property mitigation bank as they develop. We also encourage further discussion among mitigation bank review team members of establishment of appropriate banks in Utah County.

If we could be of further assistance, please contact Betsy Herrmann, Ecologist, at (801) 975-3330 extension 139.

Sincerely,

Henry R. Maddux
Utah Field Supervisor

cc: COE - Bountiful (Attn: Anna Sutton, Amy Defreese)
UDWR - Springville (Attn: Doug Sakaguchi)
EPA - Denver (Attn: Dave Ruiter)

Michael O. Leavitt
Governor

Mike Chabries
Executive Director

State of Utah

DEPARTMENT OF CORRECTIONS
DIVISION OF ADMINISTRATIVE SERVICES
FACILITIES BUREAU

14717 Minute Man Drive
Draper, UT 84020
(801) 545-5500
(801) 545-5523 FAX

October 30, 2003

Lars Anderson
Regional Environmental Engineer
Utah Dept. of Transportation
Region 2 Preconstruction
2010 South 2760 West
Salt Lake City, UT 84104-4592

Mr. Anderson,

We at Corrections are excited about the opportunity to participate in the creation of wetlands along the southern property boundaries of the State near the Draper Prison in the Open Space that was established in 2001 by the State Legislature. It is our understanding that UDOT will capture and utilize the outflow of our Geo-thermal wells after it has been used for heating the facilities at the Draper Prison site.

This letter is to confirm the Department of Corrections' support for this project. We view this project as being beneficial to UDOT, Corrections, DFCM and the citizens of the State as a whole.

Sincerely,

Greg M. Peay

Greg M. Peay, Director of Facilities

State of Utah

Department of Natural Resources

ROBERT L. MORGAN
Executive Director

Division of Wildlife Resources

KEVIN K. CONWAY
Division Director

OLENE S. WALKER
Governor

GAYLE F. McKEACHNIE
Lieutenant Governor

March 11, 2004

Mr. Lars Anderson
Environmental Manager
Utah Department of Transportation
2010 South 2760 West
Salt Lake City, Utah 84104

Subject: UDOT Region 2 Wetland Mitigation Bank, Draft prospectus, UDOT Project No. SP-0201(5)13

Dear Mr. Anderson:

The field tour of the subject property you conducted on March 5, 2004 was very informative. From this cursory review, the Utah Division of Wildlife Resources is optimistic that successful wetland creation and/or enhancement can be constructed. Possible habitat types that could be created/enhanced include permanent open water, emergent marsh, riparian forest/shrub, and wet meadow.

The UDWR is concerned, however, about the service area of the proposed mitigation bank. As described in the draft prospectus of February 2004, the service area would include the Salt Lake Valley and an area in north Utah County from the Jordan River inlet at Utah Lake northward. We believe the service area described in Utah County should be specific to impacts that occur on the Jordan River proper. Utah Lake and its associated wet meadows and ponds in north Utah County are ecologically one system that supports a vast array of avian species. Impacts that occur to wetlands in north Utah County that are not physically on the Jordan River should be mitigated in north Utah County to maintain the ecological system of Utah Lake.

If you have any questions or concerns, please feel free to contact our Habitat Manager, Douglas Sakaguchi, (801) 491-5678, in our Central Region office.

Sincerely,

Dave Hintze
Regional Supervisor

DA:dks:glo
cc: Betsy Herman, USFWS
Anna Sutton, ACOE

Central Region • 1115 North Main Street, Springville, UT 84663-1055
telephone (801) 491-5678 • facsimile (801) 491-5646 • *www.wildlife.utah.gov*

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER RIGHTS

Michael O. Leavitt
Governor
Robert L. Morgan
Executive Director
Jerry D. Olds
State Engineer

1594 West North Temple, Suite 220
PO Box 146300
Salt Lake City, Utah 84114-6300
(801) 538-7240 telephone
(801) 538-7467 fax
www.nr.utah.gov

January 8, 2004

Lars Anderson
Regional Environmental Manager
Utah Department of Transportation
2010 South 2760 West
Salt Lake City, UT 84104

Re: Proposed Mitigation Bank on Prison Property Adjacent to the Jordan River.

Dear Lars:

Thank you for the opportunity to comment on the proposed mitigation bank adjacent to the Jordan River. After considering your brief presentation of the proposal we are support of the project provided that this office will have the opportunity to review and comment on the project beyond the conceptual plan.

The Jordan River and Corner Canyon Creek are currently in a degraded state. Your proposal has the potential to increase the natural resource value of both watercourses through the removal of invasive vegetation, channel re-contouring, and reestablishment of native riparian and wetland vegetation. One advantage of this proposal over other mitigation options is that a continuous and large portion of riparian area will be preserved rather than smaller discontinuous preserved areas. This will promote better habitat for both aquatic and avian species that frequent the Jordan River Corridor.

Should the proposal go forward, this office would be willing to assist with issues pertaining to modifications of both Corner Canyon Creek and the Jordan River. If you have any questions, or require further information, please contact Chuck Williamson of our office at (801) 538-7404.

Sincerely,

Richard B Hall, P.E.
Assistant State Engineer

Jordan River Natural Areas Forum

The Jordan River Natural Areas Forum is dedicated to promoting awareness, acquisition, management and restoration of natural areas along the Jordan River balanced with the human uses of the river corridor.

Forum Members:
Bluffdale City
Draper City
Envision Utah
Great Salt Lake Audubon
Great Salt Lake Resource Conservation and Development Council
IHI Environmental
Midvale City
Murray City
Murray City School District
National Audubon Society
North Salt Lake City
Riverton City
Rose Park Neighborhood Parkway
Salt Lake City
Salt Lake County
Salt Lake County Fish and Game Association
Salt Lake Soil Conservation District
Salt Lake Valley Mosquito Abatement District
Sandy City
State of Utah
South Jordan City
South Valley Jordan River Parkway
Taylorsville City
Tree Utah
US Army Corps of Engineers, Water Resources Planning
US Fish and Wildlife Service Utah field Office
US National Park Service Rivers, Trails & Conservation Assistance Program
US Natural Resource Conservation Service
Utah County
Utah Reclamation Mitigation & Conservation Commission
West Jordan City
Woods Cross City

c/o State and Local Planning Section
Governor's Office of Planning & Budget
116 State Capitol
Salt Lake City, UT 84114
PH: 801-538-1027
FAX: 801-538-1547

February 6, 2004

Lars Anderson
Environmental Manager
UDOT Region 2
2010 South 2760 West
Salt Lake City, UT 84104

RE: Support for Mitigation Bank Concept

Dear Lars,

Thank you for the presentation you gave to the Jordan River Natural Areas Forum (JRNAF) at their meeting on January 7th regarding the proposed creation of a formal wetland mitigation bank. This letter is to express JRNAF's support for the concept.

The wetland bank would be the first of its kind for UDOT. It would be located on land owned by the Division of Forestry Fire and State Lands and set aside by statute as permanent open space. The development of additional wetlands is consistent with the Legislative intent. The wetland will provide a contiguous area of approximately 25 acres that will allow UDOT mitigation credit on future projects. Generally, the development of larger wetland areas is preferable to smaller scattered areas done on a project-by-project basis. In addition, the Department of Corrections needs to discharge geothermally-heated groundwater that will be used to heat the renovated Prison facilities. The Department of Environmental Quality issued a permit to discharge into the Jordan River contingent on the water being cooled first. The UDOT plan would be to pass the water down a canal and through a wetland before discharging into the River. UDOT intends to have the project under construction by the Summer of 2004.

JRNAF members are pleased to have been consulted about this project. JRNAF wishes to express our support for this project, contingent on being allowed the opportunity to review and comment on the design as well as the specific details of the project as they are developed. Please keep me informed as planning progresses, so that there is sufficient time to allow us time to review them before implementation.

Thank you for this opportunity to serve the interests both of the community at large and those of the Jordan River riparian habitat.

Sincerely,

Mark Bedel

Mark Bedel
Chair

Copies Furnished:
Chuck Williamson, DNR/Water Rights
Brooks Carter, US Army Corps of Engineers

FRONTIER CORPORATION USA
Environmental Consultants

Corner Canyon Creek Restoration Project

Draper, Salt Lake County, Utah
Section 36, Township 3 South, Range 1 East
and
Section 27, Township 3 South, Range 1 West
Salt Lake Base and Meridian

Prepared For:

Lars Anderson
Utah Department of Transportation
Region 2 Environmental Manager
2010 South 2760 West
Salt Lake City, Utah 84104

Prepared By:

Frontier Corporation USA
221 N. Spring Creek Parkway, Suite B
Providence, Utah 84332

Hoda A. Sondossi
Dennis C. Wenger

August 2004

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INTRODUCTION

Project Description

Frontier Corporation USA (Frontier) was retained by the Utah Department of Transportation (UDOT) to assist with the channel restoration design of Corner Canyon Creek in the vicinity of its confluence with the Jordan River in Draper, Utah. On July 23 and 24, 2004, Frontier scientists collected stream channel measurements for two study reaches. These data were collected to document and describe the physical characteristics of the Corner Canyon Creek channel within the study reaches; and to determine channel design recommendations for the restoration of the reach located west (downstream) from an existing paved trail. The restoration of the Corner Canyon Creek channel is a part of UDOT's project to create a wetland mitigation bank along the Jordan River corridor in the vicinity of Corner Canyon Creek confluence.

Project Site Location

The project site is located within the Utah State Prison property in Section 36, Township 3 South, Range 1 East, and Section 27, Township 3 South, Range 1 West (Figure 1). This is approximately 0.4 mile west of the Denver and Rio Grande Rail Road, about halfway between 12300 South and Bangerter Highway.

Scope of Project

The objectives of this study were to:

- Collect physical data in order to analyze and describe existing stream channel characteristics. This was done by collecting data at two separate stream reaches, including: 1) the reach to be restored (Design Reach), and 2) and the reach which is considered at or "near" natural state (Reference Reach) (Figure 2).

- Determine stream channel design recommendations based on the physical characteristics of the Reference and Design Reaches.

METHODS

Field Data Collection

The following is a list of physical characteristics measured and other data measured in the field:

- water surface elevation survey
- channel cross-sections (including channel top-width and floodplain width)
- pebble counts
- lengths of geomorphic units (pool, riffle, run)
- field photographs

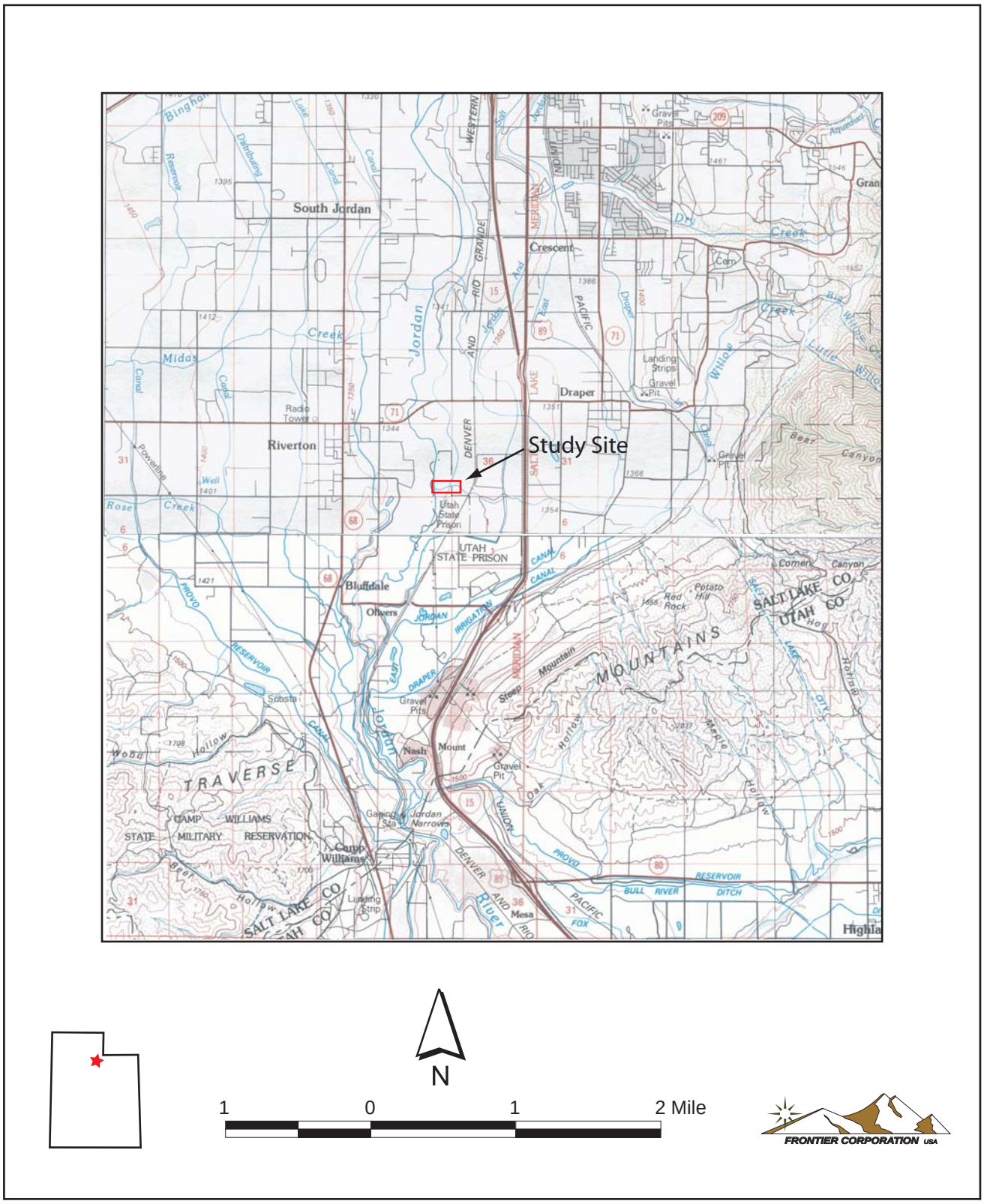


Figure 1. Study Site Location Map. Topographic base is adapted from USGS, 1:100,00 scale maps of Salt Lake City and Provo, Utah.

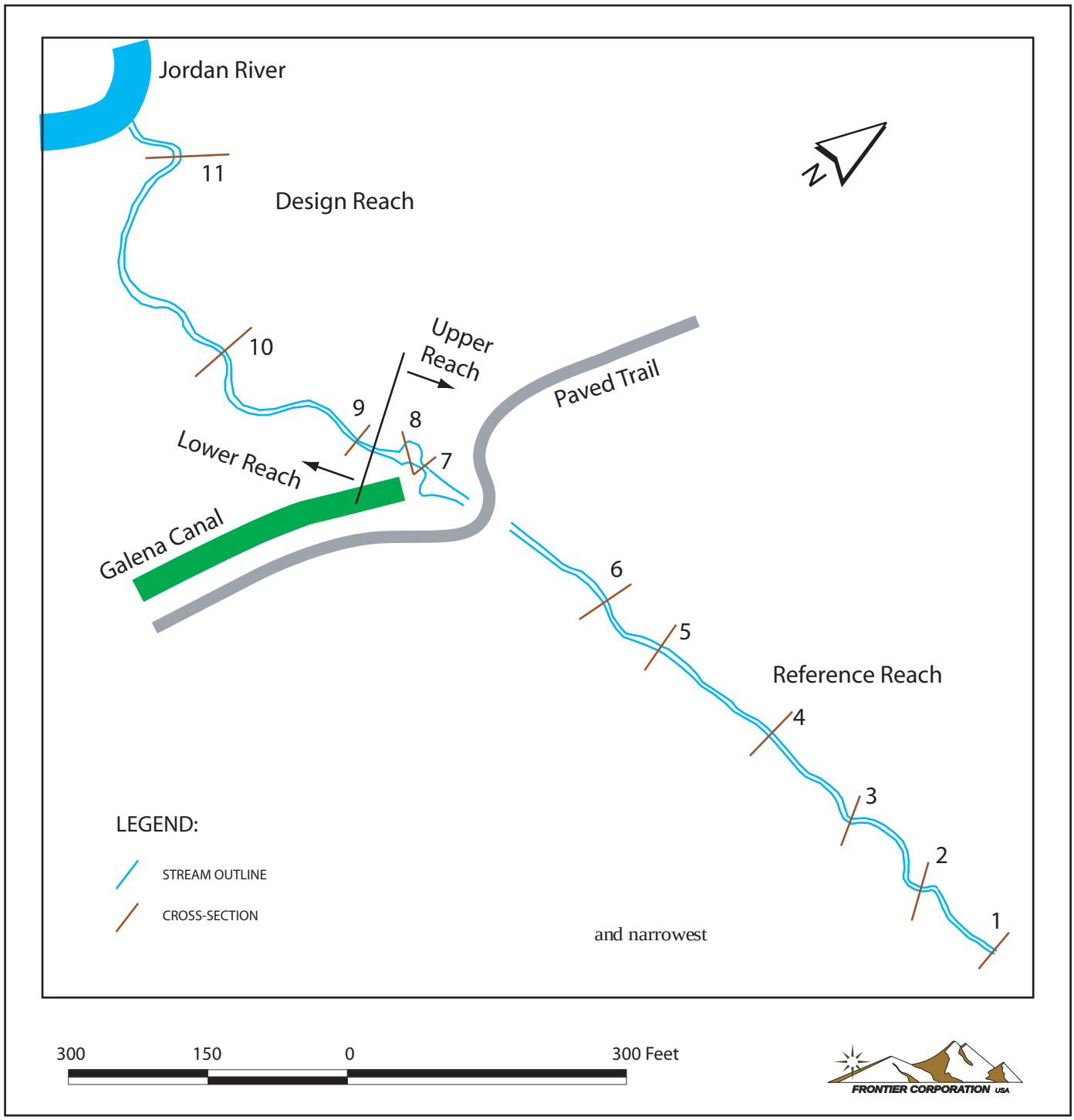


Figure 2. Site Map of Reference and Design Reaches.

Water surface elevations and cross-section endpoints were surveyed using an Electronic Distance Measurement (EDM) Total-Station. The northings, eastings, and elevations of water surface measurements were stored in an arbitrary, local coordinate system. The type of geomorphic feature (pool, riffle, or run) at each data point was noted.

An Engineer's Level was used to survey cross-sections in the Reference and Design Reaches. These cross-sections were measured where vegetation density allowed access and visibility. Geomorphic indicators were used to determine bankful width and active floodplain (floodplain) width. The range of substrate grain size of the bed, and banks, were noted at each cross-section. Pebble counts were conducted whenever clasts larger than fine gravel where found. Photographs were taken at each cross-section to document existing conditions.

Data Analysis

The following parameters were derived using the above-mentioned data:

- Bankful thalweg depth
- Bankful average depth
- Bankful top-width
- Water surface slope
- Range and Median substrate grain size
- Floodplain slope
- Flood-prone width
- Entrenchment ratio
- Sinuosity
- Meander wavelength
- Radius of curvature

The survey data were imported onto a desktop computer, and used to on-screen digitize the Right Edge of Water (REW) and Left Edge of Water (LEW), as well as a channel centerline. The lengths of channel outlines and relative elevations of water surface at surveyed locations were used to construct longitudinal profiles for each reach. Cross-section data were used to subtract thalweg depth from water surface depth at or near cross-sections, and calculate approximate average channel slope. Floodplain lengths were measured within the GIS and compared to total channel lengths to generate sinuosity values. Meander wavelength was determined by counting the number or pairs of meanders (left and right) in a given straight-line length. Radius of curvature was determined by measuring the radii of meander bends.

Cross-section data were entered into digital spreadsheets and plotted. At each cross-section, bankful depth (thalweg and average depths), bankful channel top-width, floodplain width, and entrenchment ratios were calculated. Entrenchment ratio is the bankful width divided by the flood-prone width. The flood-prone width is the width of the floodplain corresponding with twice the bankful height. Pebble count data were also entered into a digital database, plotted and median grain size calculated.

We found no existing flow data for Corner Canyon Creek. Field observations indicate that flow is variable on a daily time-scale. This is probably due to the fact that most of the flow is from agricultural irrigation return during the summer months. We used cross-section data, combined with local water surface slope values, an assumed Manning's Roughness Coefficient value (n) of 0.025, in Manning's equation to estimate bankful discharge at each cross-section.

RESULTS

Reach-averaged physical characteristics of the Reference Reach, the Design Reach are summarized in Table 1. Included is also a list of physical parameters recommended for the restoration of the Design Reach. Outlined below is a discussion of the existing physical characteristics of each reach surveyed.

The Reference Reach

The upstream end of the Reference Reach is approximately 100 feet west of the first barbed-wire fence west of the paved trail. The downstream end is at the culvert inlet which allows the Creek to flow under the paved trail (Figure 2). The Reference Reach drops 2.3 vertical feet over its 627 feet of length. Figure 3 shows the longitudinal profile of the Reference Reach.

Figure 4A shows the channel cross-sections measured in the Reference Reach. The geometry of the Reference Reach is reasonably simple. The channel banks are nearly vertical and there is little variation in depth across the channel. There are some undercut banks on the outsides of bend. The floodplain is somewhat narrow bounded by tall vertical cutbanks that decrease in height in the downstream direction.

The Reference Reach is more or less straight with a sinuosity of 1.06, has a water surface slope of 0.0037, and shows very little longitudinal variability. Approximately 60% of the length of this reach is a single continuous low-gradient, slow-flowing run. There are two shallow pools at the upstream and downstream ends of this reach. There is little longitudinal variability in thalweg depth in the Reference Reach. The water surface longitudinal profile very closely approximates the channel longitudinal profile.

The banks of the Reference Reach are made up of unconsolidated sand, silt, and clay. The substrate on the bed is mostly the same. There are patches of coarse sand and very fine gravel in the steeper sections of the reach, however the median grain size was sand-size or smaller (less than 0.08 inch).

The Reference Reach does not fit any Rosgen channel type classification exactly. The planform and cross-sectional geometry of the reach most closely resemble a A5 channel, and the water surface slope corresponds with a C5 channel.

The Design Reach

The upstream end of the Design Reach is at the culvert outlet, and the downstream end is the confluence with the Jordan River. This reach is 647 feet long and drops 10 vertical feet in elevation.

Table 1. Reach-scale physical paramters.

Parameter	Reference Reach			Upper Design Reach			Lower Design Reach			RECOMMENDATIONS		
	Min.	Max.	Ave.	Min.	Max.	Ave.	Min.	Max.	Ave.	Min.	Max.	Ave.
Bankful thalweg depth (ft.)	2.06	3.17	2.67	0.33	2.43	1.38	1.47	2.32	1.93	2	3.2	2.7
Bankful average depth (ft.)	1.76	2.97	2.42	0.24	1.32	0.78	1.36	2.06	1.73	1.75	3	2.4
Bankful top-width (ft.)	4	18	9.3	7	20	13.5	8	11	9.6	5	15	10
Water surface slope	0.001	0.009	0.0037	0.0005	vertical	0.039	0.004	0.012	0.006	0.001	0.01	0.005
Channel Slope	0	>0.009	0.0059	0	vertical	0.048	0	>0.012	0.008	0	0.015	0.008
Channel substrate (in.)	<0.08	0.12	<0.08	<0.08	0.5	<0.08	<.08	11	0.38	<0.08	10	0.35
Floodplain width (ft.)	10	25	19	10	20	15	14	20	16	10	25	20
Floodplain slope	0	0.012	0.006	0.263	vert.	0.263	0	0.013	0.005	0.001	0.02	0.005
Flood-prone width (ft.)	14	55	28	10	20	15	14	20	16	14	40	30
Entrenchment ratio	1.37	4.63	3.01	1.00	1.15	1.08	1.60	1.80	1.69	1.25	4	1.7
Sinuosity	-	-	1.06	-	-	1.45	-	-	1.45	-	-	1.45
Meander wavelength (ft.)	-	-	100	-	-	40	-	-	150	-	-	100
Radius of curvature (ft.)	10	40	25	10	16	13	10	65	38	10	60	40

Figure 3. Longitudinal profiles of water surface (calculated) and thalweg (approximated), for the Reference and Design Reaches. Approximate locations of measured cross-sections are shown.

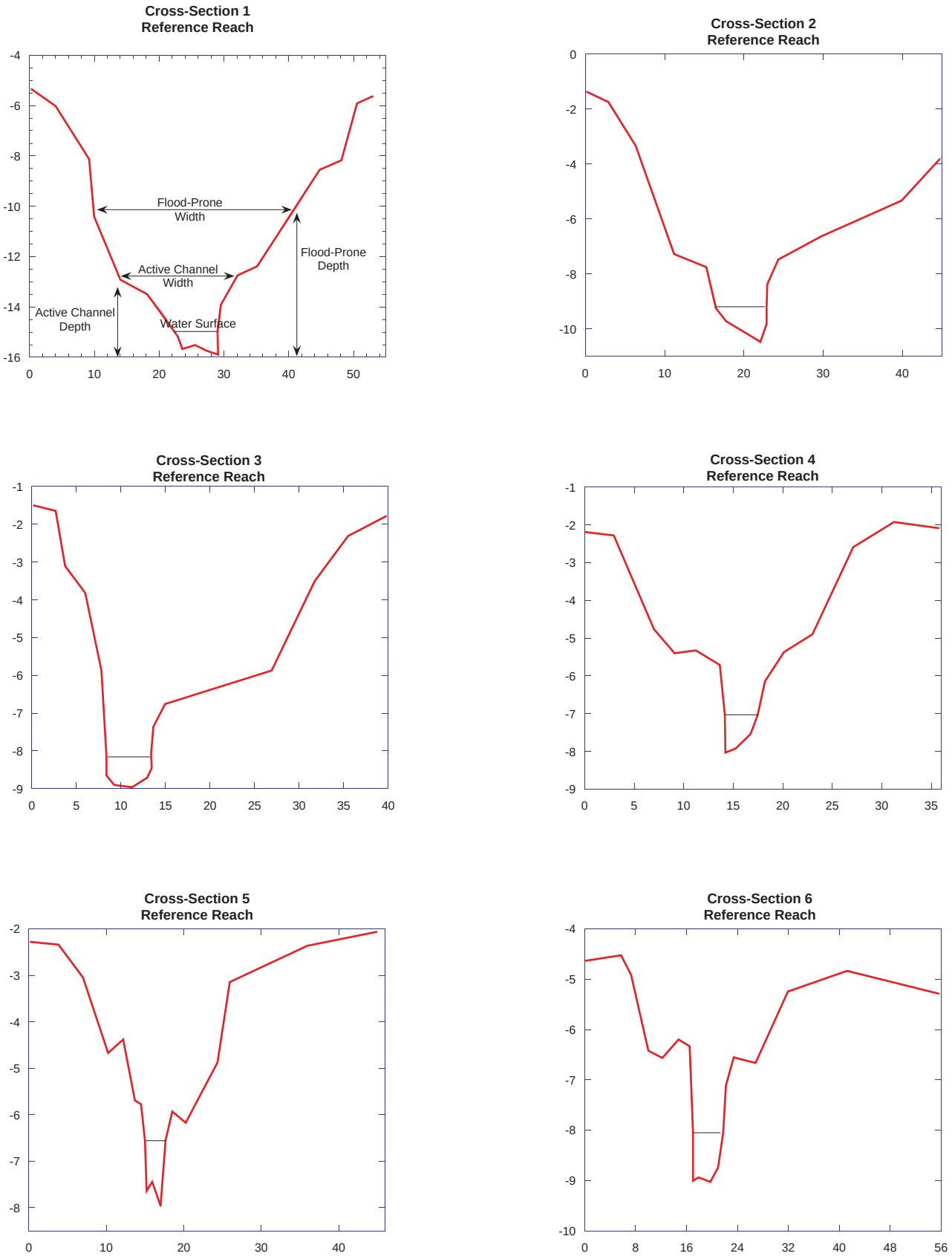


FIgure 4A. Cross-Sections 1-6 in the Reference Reach. Plot of Cross-Section 1 includes some of the physical parameters of channel cross-sections.

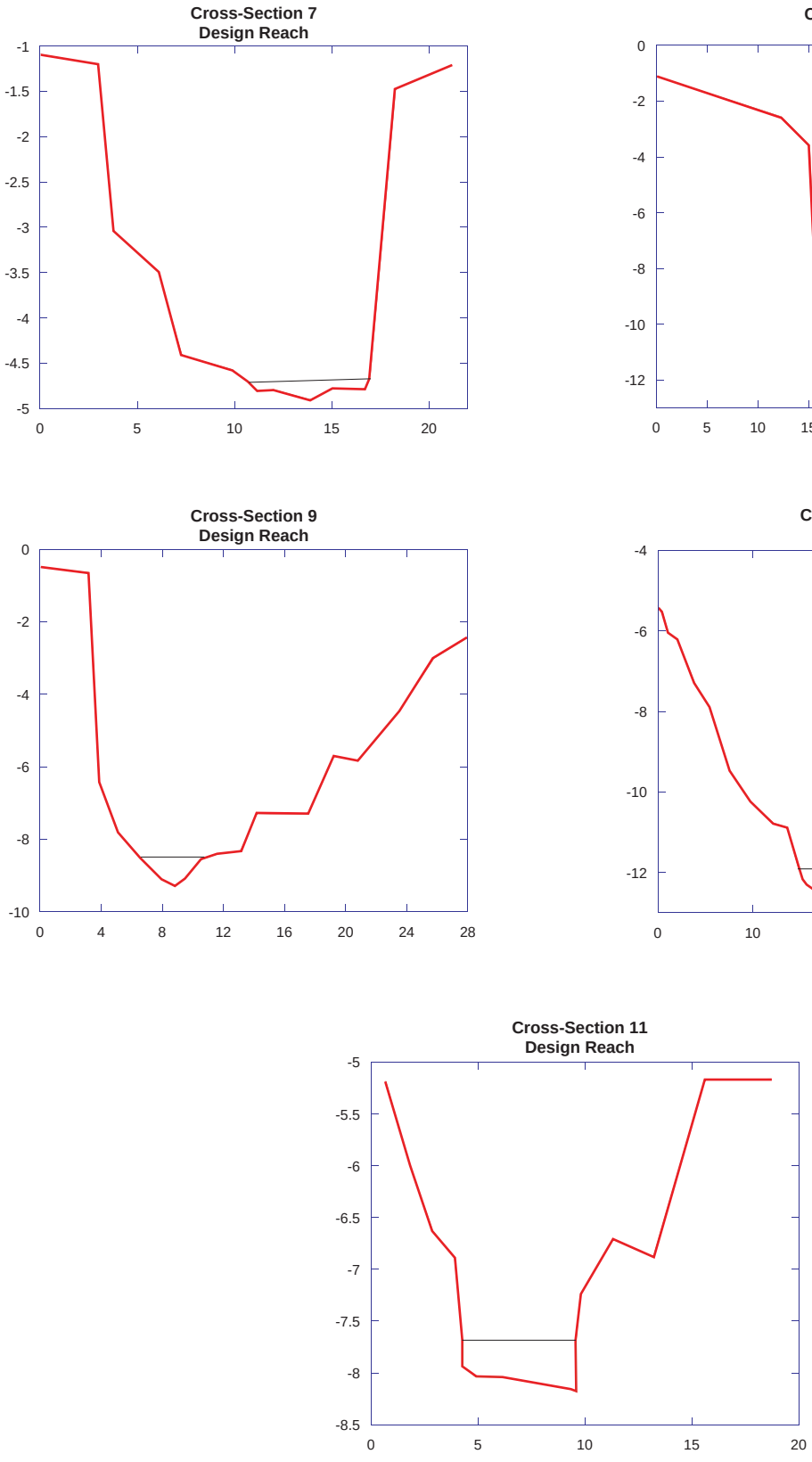


Figure 4B. Cross-Sections 7-11 in the Design Reach.

Approximately 29% of the length of the Design Reach is made up of pools, 14% riffles, and 57% runs. The overall sinuosity of the Design Reach is 1.45.

At the upstream end of the Design Reach, there was a 1.7-foot drop in water surface elevation at the culvert outlet on July 24. There was also an approximately 4.5-foot drop between Cross-Sections 7 and 8, near the upstream end of the reach. There is greater longitudinal variability in the physical characteristics of the Design Reach than the Reference Reach. Thus this reach can be divided into two sub-reaches: 1) the Upper Reach and 2) the Lower Reach.

The Upper Design Reach is steeper, and made up of an alternating sequence of riffles and pools. The Lower Design Reach is a low gradient, meandering stream which is mostly a slow-moving run.

Upper Design Reach

The Upper Reach has a somewhat simple channel geometry (Figure 4B). The bankful channel is nearly rectangular with the exception of the two plunge pools mentioned above. The floodplain is only slightly wider than the bankful width and is bounded by vertical and sometimes overhanging cutbanks up to 8 feet high.

As stated above, the Upper Design Reach is more sinuous than the Reference Reach. It is also steeper with a water surface slope of 0.039. There is a difference in the longitudinal profile of the channel and that of the water surface in the Upper Design Reach. The riffles are shallower than 6 inches and the plunge pools are more than 3 feet deep.

The banks of the Upper Design Reach are made of unconsolidated silt, clay and sand. The bed is of similar size range as well. Though some fine gravel was observed in small patches. The median grain size of the bed substrate in this reach is sand-size or smaller (less than 0.08 inch).

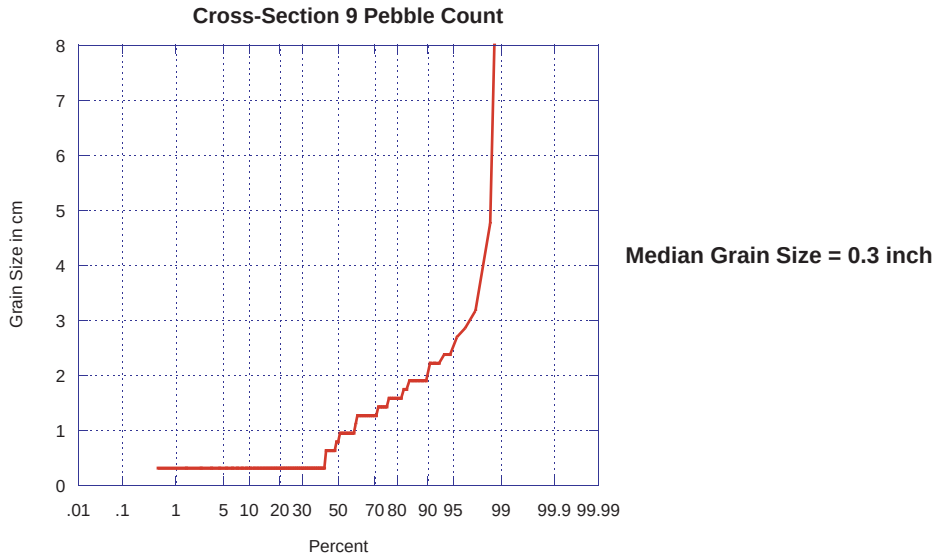
The Upper Design Reach corresponds with a B5 channel type in the Rosgen classification system.

Lower Design Reach

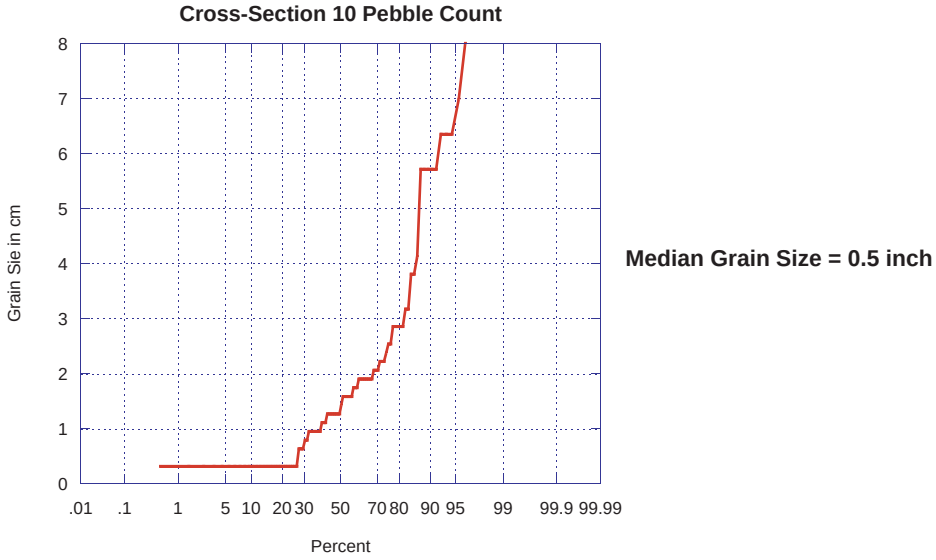
The cross-sectional geometry of the Lower Design Reach is also simple. The channel walls are vertical or undercut on outsides of bends. There is little variation in depth across the channel. The floodplain widens in the downstream direction. The height of the vertical cutbanks bounding the floodplain also decreases in the downstream direction from approximately 8 feet to less than 4 feet.

The Lower Design Reach is the most sinuous of all the reaches surveyed, with the widest meanders. There is little longitudinal variability in thalweg depth in this reach. The water surface longitudinal profile (slope = 0.006) approximates the channel longitudinal profile (slope = 0.008) fairly closely.

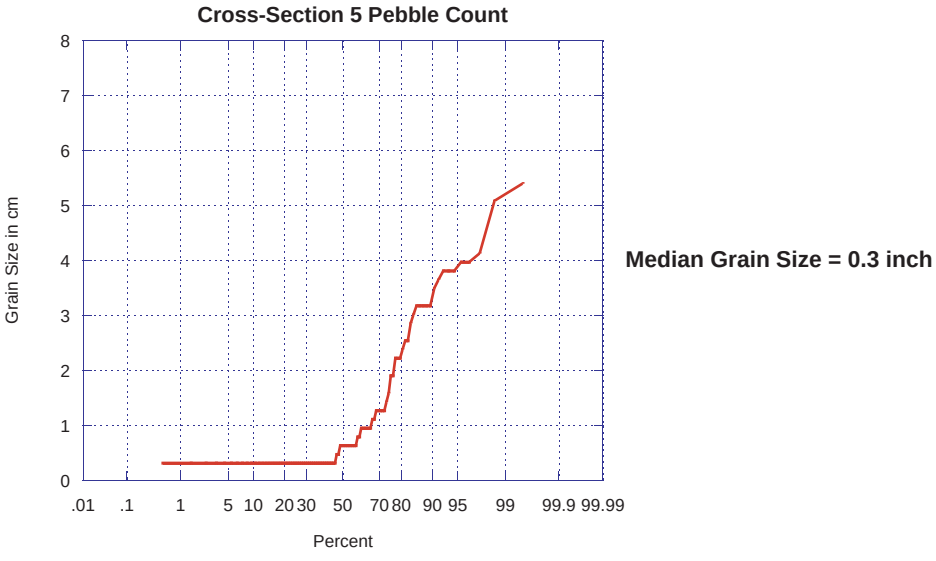
The banks of the Lower Design Reach are made up of unconsolidated silt, clay, and sand. The bed substrate however is coarser, ranging from silt to cobbles as large as 11 inches along the B-axis (Figure 5). The median grain size of the bed substrate in this reach is 0.38 inch. There is no apparent longitudinal trend in the median grain size, or the maximum grain size in this reach.



Median Grain Size = 0.3 inch



Median Grain Size = 0.5 inch



Median Grain Size = 0.3 inch

Figure 5. Probability plots of grain size distribution and median grain size at Cross-Sections 9-11.

The Lower Reach is within the active floodplain of the Jordan River and therefore subject to backwater ponding during periods of high flow. This probably also the cause of a shallower, lower, and wider floodplain. The Lower Design Reach corresponds roughly with a C5 type channel in the Rosgen classification.

Discharge

Manning's equation, with an assumed Manning's Roughness Coefficient value = 0.025 was used to estimate bankful discharge at each cross-section. Another assumption was that bankful discharge would be equal at all cross-sections. The estimated discharge values are 18-80 cfs, with a mean value of 48 cfs. Due to the assumption of roughness, and the absence of any flow data to help calibrate each cross-section, the accuracy of this method is limited. The mean value should be regarded only as a reasonable estimate.

RECOMMENDATIONS

The recommended physical parameters for the restored channel of the Design Reach are listed in Table 1. These parameters are based on four assumptions: 1) the Reference Reach most closely resembles the natural condition of the stream prior to human impacts, 2) the area west of the paved trail will be excavated and lowered in an attempt to create a wetland, 3) the restored Design Reach will be the primary source of wetland hydrology to the intended wetland area, and 4) the confluence of the restored Design Reach with the Jordan River will be extended downstream (north) to increase the length of the Design Reach.

In general, the narrowest and steepest part of the designed channel should be at the inflection point between meander bends, and the widest and flattest part at the apex of bends. This will cause a flow pattern similar to that associated with pool-riffle sequences. It is also recommended that the steepest channel banks be at the apex of meander bends.

For these reasons the suggested cross-sectional geometry of the bankful channel for the restoration of the Design Reach is very similar to the Reference Reach. However, in order to allow the stream to flood most of the surface intended to serve as a wetland bank and to implement the desired slope and channel form, the length and therefore sinuosity of the channel should be increased. The length of the restored reach may be extended up to approximately 2000 feet, nearly 3 times longer than the Design Reach in its present condition.

The introduction of gravel or cobbles to re-populate the bed of the restored channel probably will not be necessary. The excavation of the restored channel will take place through silt, clay, sand, gravel, and cobbles already in place.

If the above recommendations are followed a fairly stable reach will be created. It is possible that the channel form will adjust naturally over time and the width to depth ratio will increase slightly.

The restored channel will most likely correspond to a B5 channel type in the Rosgen classification at its upstream end, and will gradually grade into a C4 channel type at its downstream end.

REFERENCE CITED

Knighton, David. 1998. *Fluvial Forms and Processes*. Oxford University Press.

Rosgen, Dave, L. 1994. Classification of Natural Rivers. Catena 22.

APPENDIX A

FIELD PHOTOS

Photo 1. View of Cross-Section 1 from River Left (RL).

Photo 2. View of Cross-Section 2 from RR.

Photo 3. View of Cross-Section 3 from RR.

Photo 4. View of Cross-Section 4 from RL.

Photo 5. View of Cross-Section 5 from RR.

Photo 6. View of Cross-Section 6 from RR.

Photo 7. View of Cross-Section 7 from RR.

Photo 8. View of Cross-Section 8 from RR.

Photo 9. View of Cross-Section 9 from RL.

Photo 10. View of Cross-Section 11 from RR.

Photo 11. View of Cross-Section 10 from RR.

State of Utah

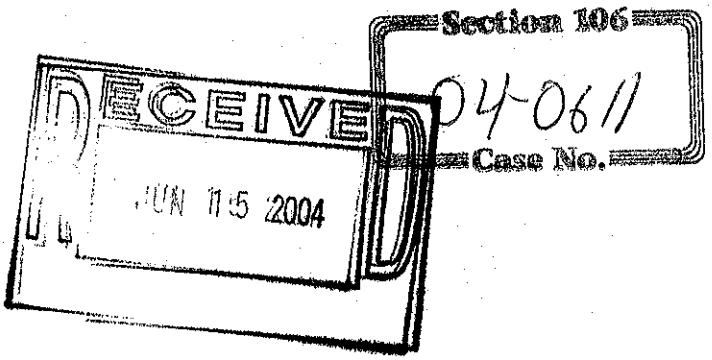
OLENE S. WALKER
Governor

GAYLE McKEACHNIE
Lieutenant Governor

DEPARTMENT OF TRANSPORTATION

JOHN R. NJORD, P.E.
Executive Director

CARLOS M. BRACERAS, P.E.
Deputy Director



May 28, 2004

James L. Dykmann, Deputy SHPO-Antiquities
Division of State History, Antiquities Section
300 Rio Grande
Salt Lake City, Utah 84101-1182 U-04-BS-0442

RE: UDOT Project No. SP-0201(5)13;SR-201, Bangerter Highway to the Jordan River; Wetland Mitigation Bank Creation. Determination of Eligibility and Finding of No Adverse Effect.

Dear Mr. Dykmann:

The Federal Highway Administration (FHWA) and the Utah Department of Transportation (UDOT) propose to construct a wetland mitigation bank along the Jordan River in southwestern Salt Lake County. Some of the available credits in the bank will be used as mitigation of impacts to wetlands from the SR-201 project. The remaining credits will be available for use by other FHWA and UDOT projects within the Jordan River watershed. The proposed wetland mitigation bank is located on the east side of the Jordan River, north of Bangerter Highway, between approximately 13000 South and 13800 South in Draper, Utah. Some of the tasks associated with creation of this wetland include the following: Excavation of approximately 25 acres, located between the Jordan River and the Jordan River Parkway Trail, for the wetland; breaching the cooling pond at the south end of the project site to allow water to flow into the Galena Canal; restoring Corner Creek to a more natural flow; breaching the west bank of the Galena Canal to allow water to flow into the wetlands, improving an access road into the site, and disposing fill from the excavation on the flat area east of the trail and below the bluffs.

In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, 16 U.S.C. §470 et seq., and Utah Code Annotated (U.C.A.) §9-8-404, the FHWA, in partnership with the Utah Department of Transportation (UDOT), has taken into account the effects of this undertaking on historic properties[1], and has afforded the Advisory Council on Historic Preservation (Council) and the Utah State Historic Preservation Officer (USHPO) an opportunity to comment on the undertaking. Please

[1] "Historic property", for purposes of Section 106, is defined in 36 CFR § 800.16(l)(1) as a prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP). Utah Code, Title 9, also accords protection to properties included in, or eligible for, the State Register (U.C.A. § 9-8-404).

review this letter and, providing you agree with the finding contained herein, sign and date the signature line at the end of this letter.

Letters describing the project, requesting information, and notification of request to be a consulting party were sent to the following Native American tribes: Confederated Tribes of Goshute Indians, Skull Valley Band of Goshute Indians, Northwestern Band of Shoshone Nation, Northern Ute Tribe, and the Shoshone-Bannock Tribes. No written responses were received, but the Skull Valley Band of Goshute Indians verbally requested to be a consulting party. The Draper Historic Preservation Commission and the Draper Historical Society have also been invited to be consulting parties.

An environmental document is being prepared for this project (Categorical Exclusion or CATEX). The area of potential effects (APE) for cultural resources is a larger area than the area of actual ground disturbance, and includes the entire project site. Portions of the wetland bank site are already wetlands or are uplands that will remain uplands. Baseline Data, Inc.(Baseline), conducted a survey of the APE. Because of the density of the ground cover between the Galena Canal and the Jordan River, approximately 153 acres were surveyed at a reconnaissance level, which entailed examining the ground in areas where the surface was more or less visible. It was anticipated that historic structure or feature remains might be visible, but that artifact scatters—particularly prehistoric—would not. Baseline conducted an intensive survey on the remainder of the project site, approximately 45 acres.

Two previously recorded sites and one new site were encountered during the inventory. The two previously recorded sites are 42SL283, a historic farmstead, and site 42SL284, the Galena canal. The newly recorded site is 42SL553, an abandoned railroad grade. The historic farmstead appears the same as when originally recorded (1998) and the site form was not updated. The site form for the Galena Canal was updated because additional features were recorded during the current inventory.

Site 42SL553 is the bed of what appears to be a narrow-gauge railroad that runs along the base of the bluff on the east side of the Jordan River. Part of the bed is on a berm and part of it has been cut into the hillslope. There are no rails, ties, spikes or other artifacts remaining. The railroad crossed the drainage of Corner Creek, but there is no evidence of a structure. The only feature identified is the remains of a concrete culvert. A 1903 map titled *Denver & Rio Grande Western Railroad in Utah* shows what appears to be a spur that most likely began at the Riverton Siding and ran between the mainline and the Jordan River south where it intersected either the Salt Lake and Utah Railroad or the branch of the Los Angeles & Salt Lake Railroad that went to Eureka. Later maps from 1937 and 1942 do not show this spur, so it may have been abandoned by then.

Site 42SL283 and site 42SL284 were previously determined **eligible** for the National Register of Historic Places (NRHP) (Section 106 case no. 98-1052); this determination has not changed. Baseline has recommended that site 42SL553 is not eligible for the NRHP because it lacks integrity, is not associated with any historical figure, is not of unique construction, and the potential for new information is low. The FHWA and the UDOT disagree with this recommendation and have determined site 42SL553 **eligible** for the NRHP under criterion D and possibly criterion A. The site retains integrity of location, setting, feeling, and association. Only a portion of the site was examined during this project, so there may be portions that are completely intact. Although preliminary research did not yield a great deal of information, additional archival research may provide the information to determine if the site is eligible under criterion A and/or criterion B. This site may in fact be part of site 42SL360, a narrow-gauge railroad bed documented just south of the current project, north of 14600 South.

A two-track road that allows access to the property from the Bangerter Highway currently crosses the narrow-gauge railroad, site 42SL553, and ends at site 42SL283, the historic farmstead. The project proposes to upgrade the road in the project area to allow access by heavy equipment. The upgrade will be minor, and at site 42SL553 will occur in the area already breached by the two-track road. Because the railroad is eligible under criterion D and possibly criterion A, the project will not alter the characteristics of the property that qualify it for the NRHP, nor diminish the necessary elements of integrity. Therefore, the FHWA and the UDOT have proposed a finding of **no adverse effect** on site 42SL553 from the project. The access road will be re-routed to avoid site 42SL283 and thus this site will not be affected. Most of the access road is on top of the bluff, parallel to the Denver & Rio Grande Western Railroad tracks (42SL293) and well away from the prehistoric site 42SL186. Conditions will be imposed on the contractor to avoid any impacts to either of these sites. The material excavated to create the wetland will be placed on the relatively flat area south of site 42SL283, between this site and site 42SL553. It will be contoured and vegetated to fit in with the surrounding topography.

The Galena Canal, site 42SL284, was constructed in 1873 for use in the copper and lead smelters in the Midvale area. It was in continual use until the early 1970s, when the only remaining smelter (United States Smelting Refining and Mining Company) in Midvale closed. The Galena Canal is approximately seven miles long, beginning at the Jordan River in the project area, and ending at the smelters in Midvale. About one mile of the canal is included in the current project area. The canal in the project area has been abandoned and no longer carries water for its intended purpose. Portions of the canal have been partially filled with sediments from the bluffs to the east, portions of the bank have collapsed, and the canal is now choked with heavy vegetation.

The original proposed design of the project was to breach the west bank of the Galena Canal in a number of places to allow the water to flow into the wetlands. It is now proposed that lateral ditches will be excavated at a number of locations (not determined to date) along the west bank of the canal. These ditches will be constructed in a manner that reflects historic laterals. Because the water flow into these laterals will be controlled only by the level of the water in the Galena Canal, no headgates will be necessary. Feature 1, the headgate at the south end of the canal, will remain in place, but will be permanently locked in an open position. At one time, Corner Creek was carried over the Galena Canal through a wooden sluice box, controlled by a headgate (Feature 5). This sluice box has collapsed and Corner Creek now intersects the Galena Canal in such a way that the creek channel and the canal have been severely downcut and eroded. A number of large blocks of concrete have been placed in the creek channel west of the canal to act as riprap. The collapsed sluice box will be removed, the downcut channel will be filled in, and will be restored to a more natural appearance. All other features of the canal will remain in place.

Since its construction, the Galena Canal has been maintained and upgraded as needed. Although there is no evidence of laterals in the project area, the excavation of laterals was a constant activity on most canals as the need for water in different locations changed. The proposed project will restore the function of the canal (to carry water) in this segment and will retain its historic appearance. Because the Galena Canal is eligible under criterion A, the project will not alter the characteristics of the property that qualify it for the NRHP, nor diminish the necessary elements of integrity. Therefore, the FHWA and the UDOT have proposed a finding of **no adverse effect** on the historic property from the project.

Although no sites were found between the Galena Canal and the Jordan River, there is the potential for buried prehistoric sites, particularly in the upland area around Corner Creek. Because of this potential, the FHWA and the UDOT are requiring that all ground-disturbing activities associated with the project be monitored by a qualified archaeologist. Although the project will have no adverse effect on historic properties, the finding of no adverse effect is based on modifying the undertaking and imposing conditions, in accordance with 36 CFR §800.5(b). Therefore, a Memorandum of Agreement (MOA) or Memorandum of Understanding (MOU) will be executed that stipulates these conditions.

In summary, three historic sites were identified in the APE for the Wetland Mitigation Bank project. All three sites are eligible for the NRHP, but the FHWA and the UDOT propose a finding of no adverse effect for the undertaking.

Please feel free to call me at (801) 975-4923 or email me at eskinner@utah.gov if you have any questions or need additional information.

Sincerely,

Betsy Skinner, Ph.D.
Regional NEPA/NHPA Specialist

c: Todd Emery, FHWA
Jeff Berna, FHWA
Dr. Melvin Brewster, THPO, Skull Valley Band of Goshute
Paul Evans, Chair, Draper Historic Preservation Commission
Paul Smith, Chair, Draper Historical Society

I concur with the determinations of eligibility and finding of **no adverse effect,** for UDOT Project No. SP-0201(5)13:SR-201, Bangerter Highway to the Jordan River; Wetland Mitigation Bank Creation; and that the UDOT has taken into account effects of the undertaking upon historic and archaeological resources in accordance with Section 106 and U.C.A.§ 9-8-404.

James L. Dykmann, Deputy SHPO-Antiquities

06 07. 04
Date

State of Utah

OLENE S. WALKER
Governor

GAYLE McKEACHNIE
Lieutenant Governor

DEPARTMENT OF TRANSPORTATION

JOHN R. NJORD, P.E.
Executive Director

CARLOS M. BRACERAS, P.E.
Deputy Director

June 15, 2004

Dr. Melvin Brewster
Tribal Historic Preservation Officer
Skull Valley Band of Goshute Indians
3359 South Main St. #808
Salt Lake City, UT 84115

RE: UDOT Project No. SP-201(5)13: SR-201, Bangerter Highway to the Jordan River, Wetland Mitigation Bank Creation. Determination of Eligibility and Finding of No Adverse Effect.

Dear Dr. Brewster:

The Federal Highway Administration (FHWA) and the Utah Department of Transportation (UDOT) propose to construct a wetland mitigation bank along the Jordan River in southwestern Salt Lake County. Some of the available credits in the bank will be used as mitigation of impacts to wetlands from the SR-201 project. The remaining credits will be available for use by other FHWA and UDOT projects within the Jordan River watershed. The proposed wetland mitigation bank is located on the east side of the Jordan River, north of Bangerter Highway, between approximately 13000 South and 13800 South in Draper, Utah. Some of the tasks associated with creation of this wetland include the following: Excavation of approximately 25 acres, located between the Jordan River and the Jordan River Parkway Trail, for the wetland; breaching the cooling pond at the south end of the project site to allow water to flow into the Galena Canal; restoring Corner Creek to a more natural flow; breaching the west bank of the Galena Canal to allow water to flow into the wetlands, improving an access road into the site, and disposing fill from the excavation on the flat area east of the trail and below the bluffs.

Enclosed please find one copy of the draft final cultural resource inventory report and site forms for the project referenced above, along with a copy of the letter to the SHPO on Determination of Eligibility and Finding of No Adverse Effect.

I am requesting that you review this report and provide any comments that you may have within 30 days. Thank you for your efforts on our behalf. Please do not hesitate to call me at (801) 975-4923 if you have any questions or need additional information.

Sincerely,

Betsy Skinner, Ph.D.
Regional NEPA/NHPA Specialist

State of Utah

OLENE S. WALKER
Governor

GAYLE McKEACHNIE
Lieutenant Governor

DEPARTMENT OF TRANSPORTATION

JOHN R. NJORD, P.E.
Executive Director

CARLOS M. BRACERAS, P.E.
Deputy Director

June 15, 2004

Mr. Paul Smith
Draper Historical Society
13587 South 300 East
Draper, UT 84020

RE: UDOT Project No. SP-201(5)13: SR-201, Bangerter Highway to the Jordan River, Wetland Mitigation Bank Creation. Determination of Eligibility and Finding of No Adverse Effect.

Dear Mr. Smith:

The Federal Highway Administration (FHWA) and the Utah Department of Transportation (UDOT) propose to construct a wetland mitigation bank along the Jordan River in southwestern Salt Lake County. Some of the available credits in the bank will be used as mitigation of impacts to wetlands from the SR-201 project. The remaining credits will be available for use by other FHWA and UDOT projects within the Jordan River watershed. The proposed wetland mitigation bank is located on the east side of the Jordan River, north of Bangerter Highway, between approximately 13000 South and 13800 South in Draper, Utah. Some of the tasks associated with creation of this wetland include the following: Excavation of approximately 25 acres, located between the Jordan River and the Jordan River Parkway Trail, for the wetland; breaching the cooling pond at the south end of the project site to allow water to flow into the Galena Canal; restoring Corner Creek to a more natural flow; breaching the west bank of the Galena Canal to allow water to flow into the wetlands, improving an access road into the site, and disposing fill from the excavation on the flat area east of the trail and below the bluffs.

Enclosed please find one copy of the draft final cultural resource inventory report and site forms for the project referenced above, along with a copy of the letter to the SHPO on Determination of Eligibility and Finding of No Adverse Effect.

I am requesting that you review this report and provide any comments that you may have within 30 days. Thank you for your efforts on our behalf. Please do not hesitate to call me at (801) 975-4923 if you have any questions or need additional information.

Sincerely,

Betsy Skinner
Regional NEPA/NHPA Specialist

State of Utah

OLENE S. WALKER
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Lieutenant Governor

DEPARTMENT OF TRANSPORTATION

JOHN R. NJORD, P.E.
Executive Director

CARLOS M. BRACERAS, P.E.
Deputy Director

June 15, 2004

Paul Evans, Chair
Draper Historic Preservation Commission
% Evans & Associates Architecture
11576 South State, #103B
Draper, UT 84020

RE: UDOT Project No. SP-201(5)13: SR-201, Bangerter Highway to the Jordan River, Wetland Mitigation Bank Creation. Determination of Eligibility and Finding of No Adverse Effect.

Dear Mr. Evans:

The Federal Highway Administration (FHWA) and the Utah Department of Transportation (UDOT) propose to construct a wetland mitigation bank along the Jordan River in southwestern Salt Lake County. Some of the available credits in the bank will be used as mitigation of impacts to wetlands from the SR-201 project. The remaining credits will be available for use by other FHWA and UDOT projects within the Jordan River watershed. The proposed wetland mitigation bank is located on the east side of the Jordan River, north of Bangerter Highway, between approximately 13000 South and 13800 South in Draper, Utah. Some of the tasks associated with creation of this wetland include the following: Excavation of approximately 25 acres, located between the Jordan River and the Jordan River Parkway Trail, for the wetland; breaching the cooling pond at the south end of the project site to allow water to flow into the Galena Canal; restoring Corner Creek to a more natural flow; breaching the west bank of the Galena Canal to allow water to flow into the wetlands, improving an access road into the site, and disposing fill from the excavation on the flat area east of the trail and below the bluffs.

Enclosed please find one copy of the draft final cultural resource inventory report and site forms for the project referenced above, along with a copy of the letter to the SHPO on Determination of Eligibility and Finding of No Adverse Effect.

I am requesting that you review this report and provide any comments that you may have within 30 days. Thank you for your efforts on our behalf. Please do not hesitate to call me at (801) 975-4923 if you have any questions or need additional information.

Sincerely,

Betsy Skinner
Regional NEPA/NHPA Specialist

U.S. Department
Of Transportation
Federal Highway
Administration

Utah Division
2520 West 4700 South, Ste. 9A
Salt Lake City, UT 84118-1847

March 5, 2004

File: SP-0201(5)13

Amos Murphy, Chairman
Confederated Tribes of Goshute Reservation
BIA Route 1
Ibapah, UT 84034-6104

Subject: Project #: SP-0201(5)13
Wetland Mitigation Bank for SR-201 Project, Bangerter Highway to the Jordan River
Request to be a Consulting Party

Dear Mr. Murphy:

The Federal Highway Administration (FHWA) and the Utah Department of Transportation (UDOT) propose to construct a wetland mitigation bank along the Jordan River in southwestern Salt Lake County. Some of the available credits in the bank will be used as mitigation of impacts to wetlands from the SR-201 project. The remaining credits will be available for use by other FHWA and UDOT projects within the Jordan River watershed. The proposed wetland mitigation bank is located on the east side of the Jordan River, north of Bangerter Highway, between approximately 13000 South and 13800 South in Draper, Utah (see enclosed figure). Some of the tasks associated with creation of this wetland include the following: Excavation of approximately 10.11 ha. (25 acres), located between the Jordan River and the Jordan River Parkway Trail, for the wetland; breaching the cooling pond to allow water to flow into the Galena Canal; restore Corner Creek to a more natural flow; breach the west bank of the Galena Canal to allow water to flow into the wetlands, improve an access road into the site, and dispose of fill from the excavation on the flat area east of the trail and below the bluffs.

A preliminary record search has indicated at least three sites are located in the area of potential effects (APE). Site 42SL186 is a prehistoric lithic scatter located on the bluffs above the Jordan River. Testing yielded scattered lithic artifacts over the site and a deeply buried hearth that was dated to 3040±80 BP. Site 42SL283 is a historic farmstead containing a standing silo and a number of structure foundations. Site 42SL284 is the Galena Canal, which has been abandoned. There is also a remnant of the railroad bed for the Lehi Bamberger railroad, but no documentation has been conducted. An intensive survey of the APE will be conducted in all un-surveyed areas. Site forms for previously recorded sites will be updated and newly discovered sites (including the railroad bed) will be recorded. We will be happy to send copies of the reports and site forms at your request.

In accordance with the regulations published by the Advisory Council on Historic Preservation, 36 CFR Part 800, FHWA request that you review this information to determine if there are any historic properties of traditional religious and/or cultural importance that may be affected by this undertaking. If you feel that there are any historic properties that may be impacted, we request your notification as such and your participation as a consulting party during the development of the environmental document.

At your request, FHWA and UDOT staff will be available to meet with you to discuss any concerns you might have. Please be assured that we will maintain strict confidentiality about certain types of information regarding traditional religious and/or cultural historic properties that might be affected by this proposed undertaking. We would also appreciate any suggestions you might have about any other groups or individuals that we should contact regarding this project.

A response within 30 days would be appreciated should you have concerns about this project and/or wish to be a consulting party. Please feel free to contact me at 801-963-0078, ext. 235, to answer any questions or provide any additional information.

Thank you for your attention to this project notification and any comments you may have.

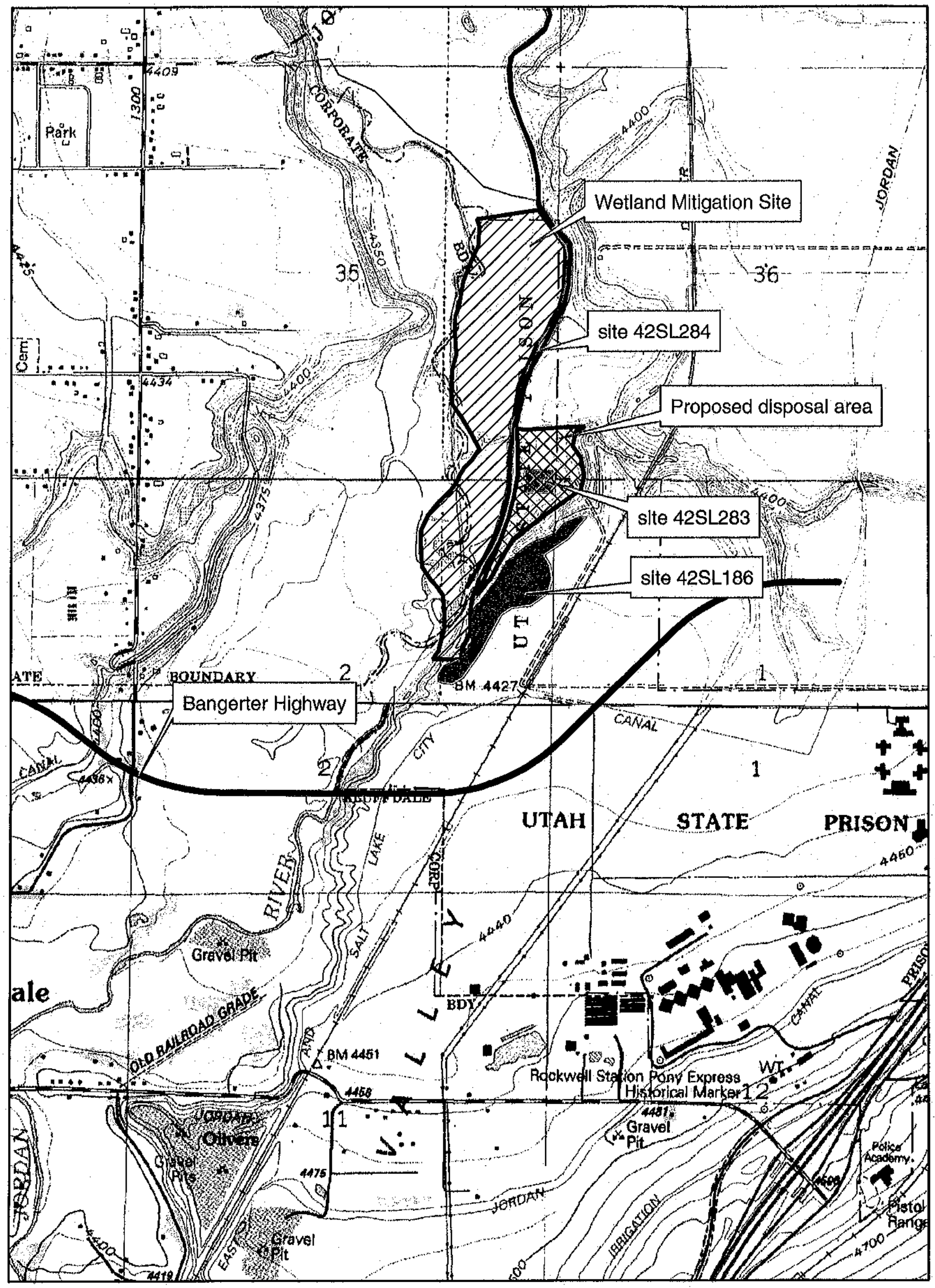
Respectfully,

Jeffrey Berna
Environmental Specialist

Enclosure

cc: Betsy Skinner, Region 2 NEPA/NHPA Specialist
Cassandra Bullcreek, Acting Cultural Resource Manager

JBerna:dm



Wetland Mitigation Site
site 42SL284
Proposed disposal area
site 42SL283
site 42SL186
Bangerter Highway
UTAH STATE PRISON
Rockwell Station Pony Express
Historical Marker
Gravel Pit

IDENTICAL COPIES OF THIS LETTER SENT TO THE FOLLOWING:

Tribal Contacts List For: Project #: STP-LC35(119)
Mehrabahn Trailway, Draper, Utah

Original to:	CC to:
Leon Bear, Chairman **Skull Valley Band of Goshute Indians** 3359 South Main St., #808 Salt Lake City, UT 84115	Melvin Brewster, Tribal Historic Preservation Office Director
Amos Murphy, Chairman (FILE COPY) **Confederated Tribes of Goshute Reservation** BIA Route 1 Ibapah, UT 84034-6104	Cassandra Bullcreek, Acting Cultural Resource Manager
Gwen Davis, Chairperson **Northwestern Band of Shoshone Nation** 862 South Main, Suite 6 Brigham City, UT 84302	Patty Madsen, Cultural Resources Director
Maxine Natchees, Chairwoman **Uintah & Ouray Ute Indian Reservation** 988 South 7500 East Fort Duchesne, Utah 84026	Betsy Chapoose, Director Cultural Rights and Protection
Blaine Edmo, Chairman **Shoshone-Bannock Tribes** Fort Hall Business Council 306 Pima Drive Fort Hall, ID 83202-0306	LaRae Buckskin, Acting Cultural Resource Director

Blaine Edmo, Chairman [redacted] **Shoshone-Bannock Tribes** Fort Hall Business Council 306 Pima Drive Fort Hall, ID 83202-0306	LaRae Buckskin, Acting Cultural Resource Director [redacted]

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE UTAH STATE HISTORIC PRESERVATION OFFICER
AND
THE FEDERAL HIGHWAY ADMINISTRATION
REGARDING IMPLEMENTATION OF CONDITIONS FOR
A FINDING OF NO ADVERSE EFFECT
FOR
CREATION OF A WETLAND MITIGATION BANK

Project No. SP-0201(5)13: SR-201, Bangerter Highway to the Jordan River, Salt Lake County, Utah

WHEREAS, the Federal Highway Administration, Utah Division (FHWA) has determined that the creation of a wetland mitigation bank for the proposed project will have no adverse effect upon properties included in or eligible for inclusion in, the National Register of Historic Places (NRHP), based on implementation of certain conditions, and has consulted with the Utah State Historic Preservation Officer (USHPO) in accordance with 36 CFR 800.6(b)(1), regulations implementing Section 106 of the National Historic Preservation Act (NHPA)(16 U.S.C. 470f), to avoid adverse effects; and

WHEREAS, the Utah Department of Transportation (UDOT) is the agency coordinating this Project on behalf of the FHWA and has participated in the consultation, the FHWA has invited them to sign this Memorandum of Understanding (MOU) pursuant to 36 CFR 800.6(c)(2) as an invited signatory; and

WHEREAS, the Northwestern Band of Shoshone of the Shoshone Nation, Idaho and Utah; the Ute Indian Tribe of the Uintah-Ouray, Utah; the Confederated Tribes of the Goshute (Ibapah), Utah; the Skull Valley Band of Goshute, Utah; and the Shoshone Bannock Tribes, Idaho (hereafter called Tribes); participated in the technical coordination and consultation, only the Skull Valley Band of Goshute Indians have chosen to participate and have been invited by FHWA to sign this MOU pursuant to 36 CFR 800.6(c)(3) as a concurring party; and

WHEREAS, the Project is located in an area of high archaeological sensitivity (floodplain of the Jordan River), with a potential for the discovery of additional properties eligible for inclusion in the NRHP, the FHWA intends to use the provisions of this MOU to address all activities that may result in impacts to both known and inadvertently discovered historic properties; and

WHEREAS, the parties to this MOU have considered the applicable requirements of the Utah Native American Graves Protection and Repatriation Act of 1992 (Utah NAGPRA)(U.C.A. 9-9-401, et seq., and its implementing Rule R230-1), the Utah Code 76-9-704; and the Federal Native American Graves Protection and Repatriation Act of 1992 (if applicable), in the course of consultation; and

NOW, THEREFORE, the FHWA and the USHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the Project on historic properties.

STIPULATIONS

The FHWA shall ensure that the following measures are carried out when creating the wetland mitigation bank (Appendix A: Figure 1).

1 USE OF THE GALENA CANAL (Site 42SL284)

The canal channel will be used to carry water from the cooling pond at the south end of the project to the created wetlands. Lateral ditches will be excavated at a number of locations (not yet determined) along the west bank of the canal to water the wetland area.

1.1 These lateral ditches will be constructed in a manner that reflects techniques used to construct laterals historically. No headgates will be required.,

1.2 Feature 1, the headgate at the south end of the canal (Appendix A: Figure 2), will remain in place, but will be permanently locked in an open position.

2 CORNER CANYON CREEK

At one time, Corner Canyon Creek was carried over the Galena Canal through a wooden sluice box (Feature 5), controlled by a headgate (Appendix A: Figure 2). This sluice box has collapsed and Corner Canyon Creek now intersects the canal in such a way that the creek channel and the canal have been severely downcut and eroded. Large blocks of concrete and other materials have been placed in the creek channel west of the canal to act as riprap. Corner Creek will be realigned to the north, creating a more natural channel that will be allowed to meander.

2.1 The sluice box will be removed

2.2 The large blocks of concrete and other materials will be removed and disposed of, except those pieces tentatively identified as millstones. If they are in fact millstones (or some other historic artifact), they will be placed temporarily near the silo at site 42SL283, the historic farmstead. The final location for the millstones will be determined in partnership with Draper City at a later time.

3 ABANDONED RAILROAD BED (Site 42SL553)

The railroad bed appears to have carried a narrow-gauge railroad, and may be a spur of the Denver and Rio Grande Western (D&RGW) Railroad (42SL293).

3.1 The upgraded access road will be placed in the same area of the railroad bed that has already been breached by the existing two-track road (Appendix A: Figure 2).

3.2 The upgraded access road will be re-routed to avoid site 42SL283 (the historic farmstead).

3.3 The upgraded access road will avoid site 42SL186 (prehistoric) and there will be no impact to the existing D&RGW tracks.

4 SITE 42SL186

The boundaries of the prehistoric site on top of the bluff at the southeast end of the project have not been well defined, but are assumed to cover most of the bluff between the edge of the

bluff and the two-track road adjacent to the railroad tracks (Appendix A: Figures 2 and 3). A portion of this site (southern portion) was covered several years ago with fill excavated for the Bangerter Highway. This material (primarily composed of Lake Bonneville marl) was recontoured in 2000 and seeded with a native seed mix.

4.1 No heavy equipment or other vehicles will travel over any part of the archaeological site.

5 DISPOSAL OF EXCESS MATERIAL

5.1 Excess material excavated from the wetland area may be placed in the flat area south of site 42SL283, between this site and site 42SL553 (Appendix A: Figure 2).

5.2 The material will be contoured and re-vegetated to fit with the surrounding topography.

6 ARCHAEOLOGICAL MONITORING

6.1 An archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-9) will monitor all ground-disturbing activities, focusing primarily on the uplands around Corner Creek and any work done on or near the archaeological site (42SL186), but monitoring other areas as well.

6.2 At a minimum, such monitoring will include recording and reporting of major features or artifact concentrations uncovered, and recovery/curation of a sample of remains uncovered where practicable.

6.3 Human remains will be treated as specified in Stipulation 8, below.

6.4 A monitoring plan will be developed and approved by FHWA, UDOT, and the SHPO before construction begins.

7 INADVERTENT DISCOVERY OF CULTURAL RESOURCES

The FHWA and the UDOT have developed a plan of action for consultation with the Tribes and the USHPO regarding inadvertent discovery of historic properties potentially eligible to the NRHP. The plan detailed below describes coordinating efforts among the FHWA, the UDOT, the Tribes (if applicable), and the USHPO; inventory and evaluation processes; assessment of effects to historic properties (not affecting issues related to the Utah NAGPRA); and mitigation strategies.

In the event that cultural resources are discovered:

7.1 *Cease Activity*: Work will stop in the immediate area of the discovery in accordance with UDOT Standard Specification 01355, Part 1.10 as detailed in Appendix B. The UDOT will notify the USHPO and FHWA. The FHWA will subsequently notify the Council and Tribes (if applicable). If human remains are encountered, the contractor will follow procedures detailed in Stipulation 8 below.

7.2 *Evaluate Resource*: The UDOT will initiate internal coordination with their contractor to have the qualified archaeologist evaluate the resource for NRHP eligibility. The designated archaeologist will prepare draft inventory reports and recommendations regarding the NRHP eligibility of identified properties. The content and scope of the draft and final report(s) on the results of the evaluation studies will follow state guidelines as found in the UDOT's Consultant Guidelines.

7.3 *Determine Eligibility*: In consultation with the USHPO, the UDOT will apply the NRHP criteria (36 CFR 60.4) to all cultural resources discovered during the Project

and associated construction activities with regard to their potential for inclusion in the NRHP. This evaluation shall take into account the guidance found in all applicable National Register Bulletins.

7.4 *Assessment of Effects*: In situations affecting historic properties, application of the criteria of effect and adverse effect as defined in 36 CFR 800.5 will be implemented. A Determination of Eligibility and Finding of Effect (DOE/FOE) will be submitted to the USHPO and to the Tribes (if applicable) along with appropriate documents relative to the stipulations of this MOU.

7.5 *Treating Effects*: If construction of the Project might affect historic properties as defined by 36 CFR 800.4(d), the UDOT will develop site specific treatment plans to minimize or mitigate the effects of the historic properties located within the area of the discovery in coordination with the USHPO, the Tribes (if applicable), and other interested parties as follows:

- 7.5.1 Human remains and the associated cultural items will be treated in accordance with the Utah NAGPRA (See Stipulation 8 of this MOU).
- 7.5.2 Avoiding impact to historic properties is preferred to mitigation. Redesign will be implemented when technically, economically, and environmentally feasible and prudent, to avoid constructing the Project or related construction activities in a manner that may affect historic properties.
- 7.5.3 If the historic property cannot be avoided, data recovery will be undertaken.
  - 7.5.3.1 The FHWA shall ensure that a data recovery plan is developed by UDOT in consultation with the USHPO, the Tribes (if applicable), and consulting parties for the recovery of archeological data. The plan shall be consistent with the *Secretary of the Interior's Standards and Guidelines for Archeological Documentation* (48 FR 44734-37) and take into account the Council's publication, *Treatment of Archeological Properties* (Advisory Council on Historic Preservation, 1980), subject to any pertinent revisions the Council may make in the publication prior to completion of the data recovery plan and to relevant USHPO or other guidance.
  - 7.5.3.2 The data recovery plan shall be submitted by the UDOT to the USHPO, and also to the Tribes (if applicable), for a 30-day review. Unless these parties object within 30 days after receipt of the plan, the FHWA through the UDOT shall ensure that it is implemented.

7.6 *Cultural material (artifact) curation*. Upon discovery and gathering of cultural items within the Project APE, exclusive of Utah NAGPRA items as defined by that act, the UDOT will ensure that the items will be placed in an appropriate repository facility as described in 36 CFR 79.

7.7 *Report and documentation curation*. Upon the UDOT finalizing the documentation of the Project, all reports and documentation will accompany the cultural material consistent with the provisions described in 36 CFR 79. Upon written request of the Tribes, a copy of said documentation shall be provided for the tribal archives.

8 PROJECT SPECIFIC PROCEDURES FOR IMPLEMENTING UTAH NAGPRA (U.C.A. 9-9-401 *et. seq.* AND ITS IMPLEMENTING RULE R230-1 AND UTAH CODE 76-9-704)

8.1 Purpose

8.1.1 The Parties to the MOU intend to respect and be sensitive to the cultural perspectives and responsibilities, the religious and ceremonial rights, and sacred practices of the Tribes in fulfilling tribal interests in the discovery of Utah NAGPRA related items identified during the Project.

8.1.2 If circumstances warrant and a determination is made by FHWA that federal NAGPRA applies to a discovery case during construction, then FHWA will ensure that all applicable federal procedures and requirements are met.

8.2 Objectives

8.2.1 To implement the legislative provisions of Utah law, specifically U.C.A. 76-9-704 and 9-9-401 et. seq. within the intent of such legislation.

8.2.2 To implement legal requirements, while respecting and maintaining the dignity of the individual and the Utah NAGPRA related cultural items potentially discovered during the Project's construction, and in conjunction with the best interests of the Tribes.

8.2.3 To facilitate UDOT compliance with Utah NAGPRA, respective to decisions that must be made, and actions taken, regarding curation, disposition, re-interment, data recovery, consultation and notification, and treatment of human remains and cultural items as defined by Utah NAGPRA

8.2.4 To provide guidance for construction personnel regarding the discovery and notification process upon location of human remains and cultural items as defined by Utah NAGPRA.

8.3 Implementation of Objectives

8.3.1 The UDOT will provide the contractor and UDOT Resident Engineer (RE) with a set of procedures to be followed in the event of an inadvertent discovery of human remains.

8.3.2 In accordance with UDOT Standard Specification 01355, Part 1.10 (Appendix B), upon discovery of human remains (including cultural items as defined by Utah NAGPRA), construction activities within the immediate area of discovery shall cease, the site will be secured, and notification of local law enforcement, Division of Indian Affairs (DIA) and USHPO Antiquities Section as required by U.C.A.9-9-403, and U.C.A. 76-9-704, will commence immediately. In addition, Tribes desiring to be notified at this time will be included on the contact list.

8.3.3 If the site is determined not to contain Native American remains, the UDOT will contact the FHWA, and the FHWA will notify the Tribes of such determination. Work will resume at the direction of the UDOT archaeologist.

8.3.4 If the site is determined to contain Native American remains, the UDOT

will contact FHWA within one (1) working day. The FHWA will provide notification to the Tribes within one (1) working day and invite the Tribes to visit the site containing the remains. If contact with the FHWA cannot be made within this timeframe, the UDOT may contact the Tribes directly for the purposes of expediting notification. The Tribes will be allowed access to the remains for the purpose of performing ceremonies, discussing treatment options, and monitoring excavation if removal is deemed necessary.

8.3.5 The Tribes will be compensated for expenses incurred to visit the burial site and/or perform ceremonies. Compensation will be based on and limited to those activities included within FHWA's Native American Tribal Consultation Policies and Guidelines.

8.4 *Excavation versus Preservation in Place*: At such time a discovery of human remains is made and construction ceases in the area of the discovery, and having satisfied the requirements of U.C.A. 76-9-704:

8.4.1 If the remains are in immediate danger of harm, or in the event that construction could not move, they will be excavated in accordance with R-230-1-7.1.b.

8.4.2 If the site at which the remains are located can remain intact and free from immediate harm, the site will be secured and a preservation plan will be implemented according to R-230-1-7.1.a.

8.5 *Custody of Remains*: Any excavated Native American remains will remain in the custody of the UDOT pending:

8.5.1 Consultation and determination of ownership by the Native American Remains Review Committee (NARRC) pursuant to Utah NAGPRA [9-9-403 and R-230-1-13 et. seq.], or

8.5.2 In the event of multiple requests for repatriation, the requesting parties agree upon its disposition, or

8.5.3 The dispute is otherwise resolved by a court of competent jurisdiction.

8.6 *Repatriation*: The repatriation of the individual will be consistent with Utah NAGPRA [9-9-403 and R-230-1-13 et. seq.]. It is incumbent upon all parties to this MOU to work towards the repatriation of human remains in as timely manner as allowable by law. FHWA is responsible for ensuring that the UDOT and its consultants follow state law procedures and the stipulations contained herein.

8.7 *Status Inquiry*: At any time in the process, the Tribes may inquire with FHWA as to the status of human remains associated with this Project. It is the responsibility of the FHWA to address the questions and concerns of any Tribe within five (5) working days. If the Tribes are interested in verifying the physical condition and storage treatment of any human remains, a verbal or written request must be submitted to FHWA. FHWA is responsible for arranging a meeting within five (5) working days, or at the earliest convenience of the interested Tribe(s).

8.8 *Dispute Resolution*: Disputes on issues other than those related to Utah NAGPRA shall

be resolved according to dispute resolution procedures described in this MOU (Stipulation 9.5). The Utah NARRC will resolve all Utah NAGPRA related disputes.

8.9 *Treatment of Utah NAGPRA Related Items and Human Remains*

8.9.1 Human Remains

8.9.1.1 Any and all human remains that have been damaged or removed due to construction activity will be immediately returned to accompany the remains still present in the site.

8.9.1.2 Pursuant to Utah NAGPRA, scientific study of human remains may be carried out only with approval of the owner of the human remains as established in 9-9-403(1) and (2). If ownership is unknown, scientific study shall be restricted to that sufficient to identify ownership but will be limited to non-destructive analysis.

8.9.2 Associated Funerary Items/Items of Cultural Patrimony. Unless otherwise identified, associated funerary items/items of cultural patrimony found near or about the discovery of human remains will be immediately returned to accompany the human remains. Associated funerary items are defined as items that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed intentionally at the time of death or later, with or near individual human remains.

8.9.2.1 Objects of cultural patrimony mean items having ongoing historical, traditional, or cultural importance central to the Indian tribe itself. If they are so identified, documentation of these materials will be included in the reports as funerary objects and/or items of cultural patrimony

9 ADMINISTRATIVE STIPULATIONS

9.1 Changes in the Undertaking

9.1.1 Changes to the Project will not relieve the FHWA or UDOT of the responsibility of completing resource evaluations.

9.1.2 If, during the Project planning or implementation, modification and/or changes are proposed in ancillary areas that have not been previously inventoried for historic properties, the UDOT shall ensure that the area is inventoried and that historic properties are evaluated in a manner consistent with the inventory, evaluation, and standards identified in Stipulation 6 of this MOU. The UDOT will prepare a draft report(s) of the inventory results and submit said document(s) to the parties of this MOU for review and comment. A final report incorporating the comments of the said parties will be prepared. Final reports will be provided to the parties of this MOU.

9.1.3 The parties to this MOU shall be afforded an opportunity to comment within 30 days on documents prepared in response to revisions to the undertaking.

9.2 *Documents*

9.2.1 The UDOT shall ensure that any/all reports on activities carried out pursuant to this MOU are provided to the USHPO, the Council, the Tribes (if applicable), and upon request to any other consulting parties, following completion of the activities stipulated in the MOU.

9.2.2 Unless otherwise stated, document review shall be 30 days following receipt of said document submitted for review. Unless notified, the FHWA and UDOT may assume failure of any party to respond within 30 days indicates their concurrence.

9.3 *Personnel Qualifications*: The UDOT shall ensure that all work carried out pursuant to this agreement is completed by, or under the direct supervision of, a person or persons meeting or exceeding the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (36 CFR 61)

9.4 *Tribal Consultation Process*: Unless otherwise agreed upon, Tribal consultation will occur between the FHWA and the Tribes throughout the Project.

9.5 *Dispute Resolution*

9.5.1 Should the USHPO, the Tribes, the DIA, or the Council, object within 30 days to any documentation provided for review pursuant to this MOU, the FHWA shall consult with the objecting party to resolve the objection. If the FHWA determines that the objection cannot be resolved, the FHWA shall request further comments of the Council pursuant to 36 CFR 800.6(b). Any Council comment provided in response to such a request will be taken into account by the FHWA in accordance with 36 CFR 800.6(c)(2) with reference only to the subject of the dispute; the FHWA/UDOT's responsibility to carry out all actions under this MOU that are not the subject of the dispute will remain unchanged.

9.5.2 The Utah Division of Indian Affairs State Native American Remains Review Committee (NARRC) will arbitrate disputes relative to Utah NAGPRA in accordance with U.C.A. 9-9-405(3)(c), if consultation fails to resolve the dispute.

9.6 *Duration*. This agreement will be null and void if its terms are not carried out within five (5) years from the date of its execution. In such event the FHWA shall notify parties to this agreement in writing, and if it chooses to continue with the undertaking, shall re-initiate review for the undertaking in accordance with 36 CFR Part 800.

9.7 *Amendment*

9.7.1 Any signatory party to this MOU may request an amendment (s), whereupon the other signature parties will consult to consider such amendment(s).

9.7.2 Any proposed amendment to this MOU must be submitted to the FHWA in writing, with an explanation as to the reasoning for the requested change. The FHWA will initiate consultation with the signature parties for their consideration of the proposed amendment(s) under the time provisions as set forth in 9.7.3.

9.7.3 The FHWA will provide copies of written request(s) for amendment from any

signatory party to all other signature parties within 3 days, and the parties agree to begin discussions regarding proposed amendments immediately.

9.8 Termination

9.8.1 If the MOU is not amended following the consultation set out in Stipulation 9.7, it may be terminated by any signatory or invited signatory by written notification.

9.8.2 Within 30 days following termination, the FHWA shall notify the signatories if it will initiate consultation to execute a new MOU with the signatories under 36 CFR 800.6(c)(1) or request the comments of the Council under 36 CFR 800.7(a) and proceed accordingly.

9.9 *Reports On Implementation*

9.9.1 On or before July 1 of every year until the FHWA and SHPO agree in writing that the terms of this agreement have been fulfilled, the UDOT shall prepare and provide all parties to this agreement a summary report detailing work undertaken pursuant to its terms. Such report shall address the following topics:

- Progress in constructing the project;
- Results of archaeological monitoring, if construction has been undertaken;
- Any inadvertent discoveries that have been made, if construction has been undertaken;
- Any problems or unexpected issues encountered during the year; and
- Any changes that the FHWA or UDOT believe should be made in implementation of this agreement.

9.9.2 The UDOT shall ensure that its annual report is made available for public inspection, that potentially interested members of the public are made aware of its availability, and that interested members of the public are invited to provide comments to the SHPO, Tribes (if applicable), and Council as well as to the FHWA.

9.9.3 The signatories to this agreement shall review the annual report and provide comments to the UDOT. Non-signatory parties to this agreement may review and comment on the annual report at their discretion.

9.9.4 At the request of any party to this agreement, the FHWA shall ensure that a meeting or meetings are held to facilitate review and comment, to resolve questions, or to resolve adverse comments.

9.9.5 Based on this review, the signatories to this agreement shall determine whether this agreement shall continue in force, be amended, or be terminated.

Execution of this Memorandum of Understanding and implementation of its terms evidence that the FHWA has afforded the USHPO an opportunity to comment on the **SR-201 Wetland Mitigation Bank Creation, Project SP-0201(5)13: SR-201, Bangerter Highway to the Jordan River, Salt Lake County, Utah,** and its effects on historic properties, and that FHWA has taken into account the effects of the undertaking on historic properties.

SIGNATORIES

FEDERAL HIGHWAY ADMINISTRATION

By: _____ Date: 2/15/05

Mr. David C. Gibbs
Division Administrator

UTAH STATE HISTORIC PRESERVATION OFFICER

By: _____ Date: 2/16/05

Mr. Wilson Martin
State Historic Preservation Officer

INVITED SIGNATORIES

UTAH DEPARTMENT OF TRANSPORTATION

By: _____ Date: 2-7-05

Mr. Randall Park
Region 2 Director

CONCURRING PARTY

SKULL VALLEY BAND OF GOSHUTE INDIANS

By: _____ Date: _____

Leon Bear, Chair

APPENDIX A – MAPS

Wetland Mitigation Bank Conceptual Plan
Archaeological Site Locations
Site 42SL186 Known Boundaries

MITIGATION SITE CONCEPT PLAN

UTAH DEPARTMENT OF TRANSPORTATION
REGION TWO — PRECONSTRUCTION
LANDSCAPE DESIGN

NO.	DATE	DESIGN REV. BY	MAPS COMP. BY	PARCELS AFFECTED	REQUEST BY	REMARKS
		ORIGINAL SUBMISSION FOR AUTHORIZATION				

REVISIONS

DESIGN — CHECK — REVIEW
DRAWN — CHECK — DATE
QUANT. — CHECK — BY

APPROVAL RECOMM. — DATE — PROJ. LANDSCAPE ARCHITECT
APPROVED — DATE — PRECONSTRUCTION ENGINEER

WETLAND MITIGATION
BANK--DRAPER, UTAH

PROJECT NUMBER SP-0201(5)13

SALT LAKE COUNTY

SHEET NO.

Concept2.dgn 02/01/2005 08:19:11 AM

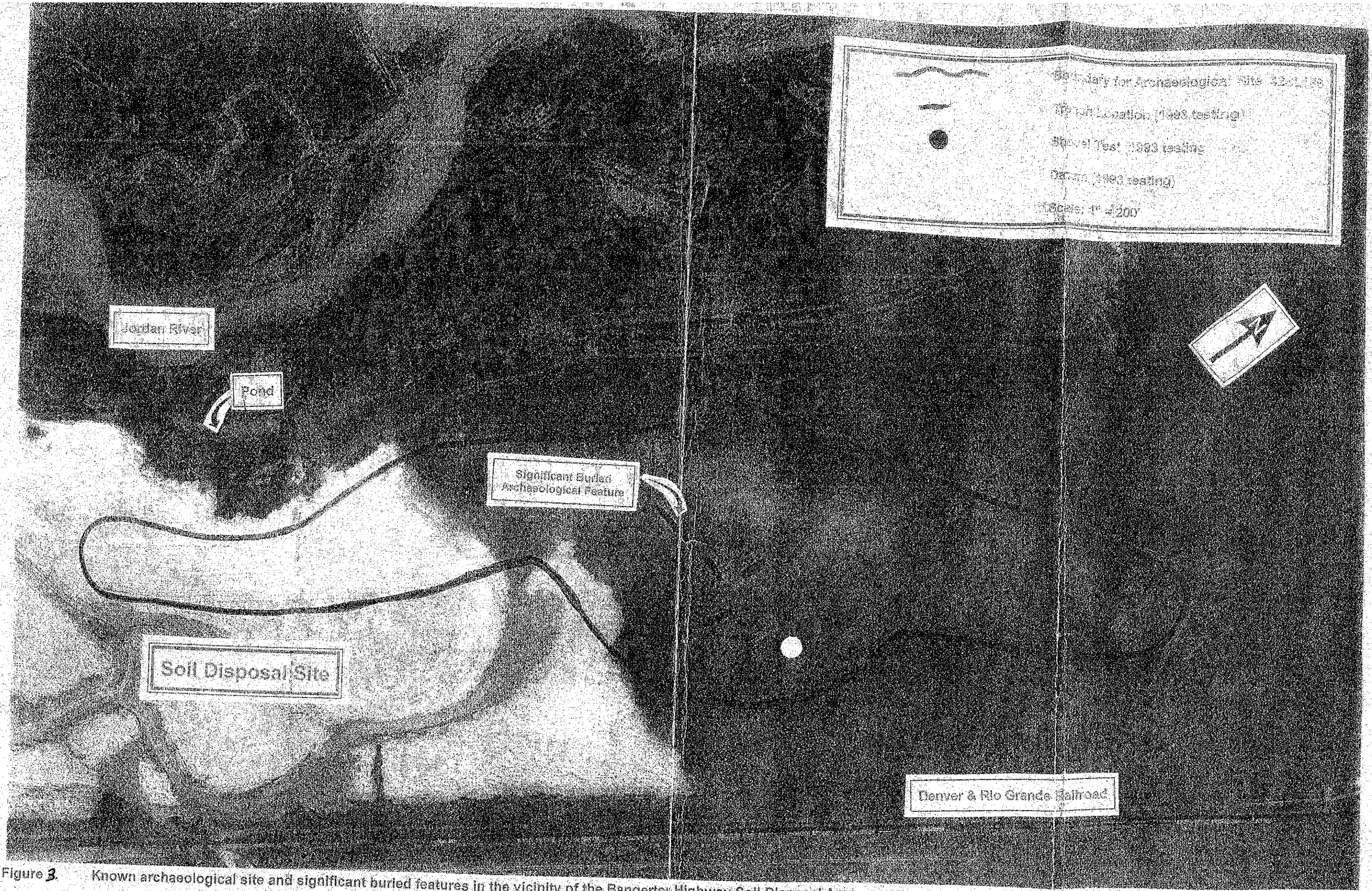
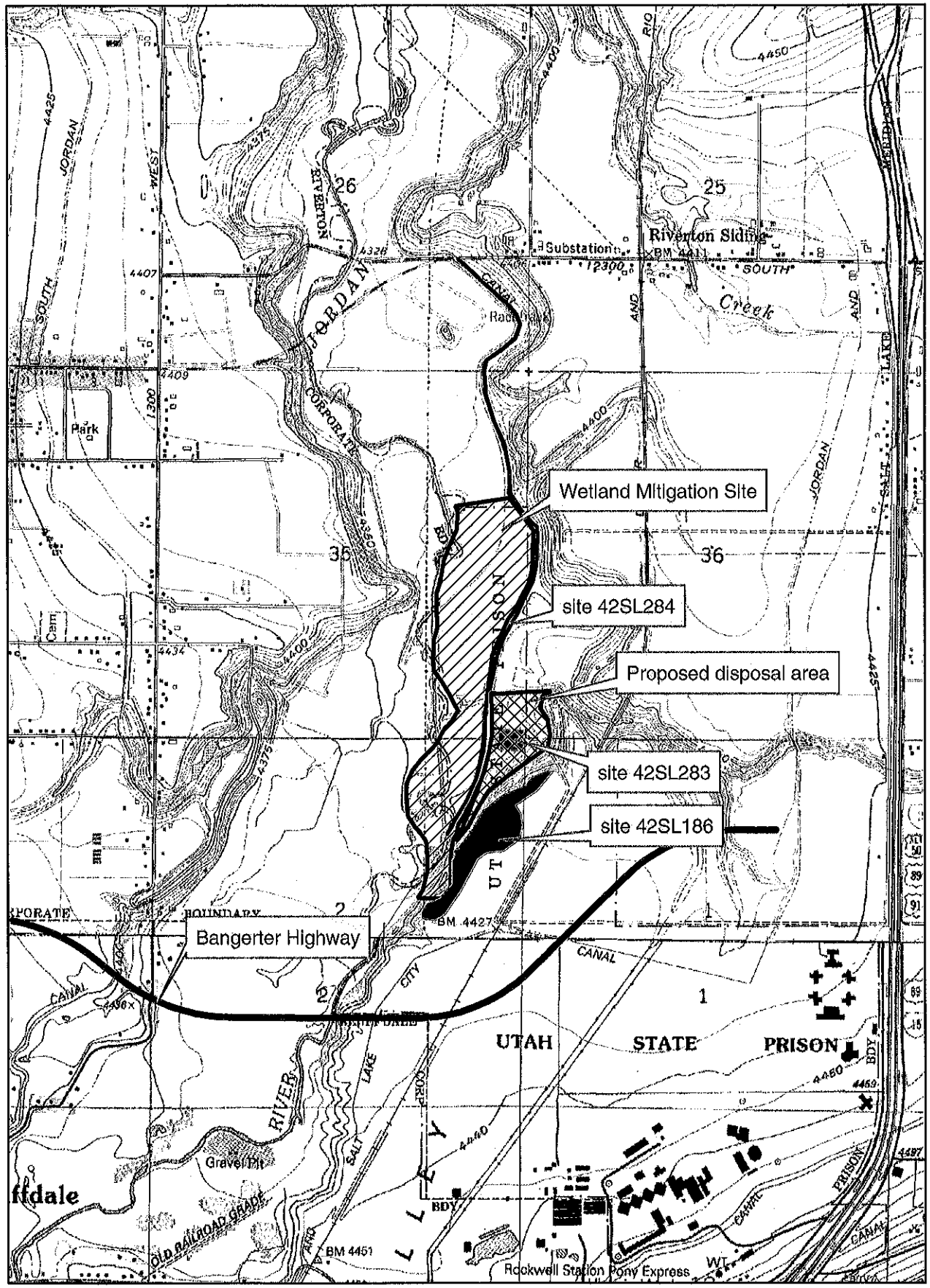


Figure 3. Known archaeological site and significant buried features in the vicinity of the Bangerter Highway Soil Disposal Area.


Wetland Mitigation Site
site 42SL284
Proposed disposal area
site 42SL283
site 42SL186
Bangerter Highway
Riverton Siding
Substation
Park
UTAH
STATE
PRISON
Gravel Pit
OLD RAILROAD GRADE
Rockwell Station Pony Express
BM 4427
BM 4461
25
26
35
36
1
2
27

APPENDIX B

UDOT STANDARD SPECIFICATION FOR DISCOVERY OF HISTORIC, ARCHEOLOGICAL OR PALEONTOLOGICAL OBJECTS

Standard Specification Section 01355, Part 1.10, Discovery of Historical, Archaeological or Paleontological Objects

Standard Specification Section 01355, Part 1.10, Discovery of Historical, Archaeological or Paleontological Objects, will be enforced during this project. This specification stipulates procedures to be followed should any archaeological, historical, or paleontological resource be discovered during construction of the project. These procedures are as follows:

1. Immediately suspend construction operations in the vicinity of the discovery if a suspected historic, archeological or paleontological item, feature, prehistoric dwelling sites or artifacts of historic or archeological significance are encountered.

2. Verbally notify the ENGINEER of the nature and exact location of the findings.

3. The ENGINEER contacts the State archeological authorities to determine the disposition of the objects.

4. Protect the discovered objects and provide written confirmation of the discovery to the ENGINEER within 2 calendar days.

5. The ENGINEER keeps the CONTRACTOR informed concerning the status of the restriction.
   - The time necessary for the DEPARTMENT to handle the discovered item, feature, or site is variable and dependent on the nature and condition of the discovered item.
   - Expect a two (2) week or more delay in the vicinity of the discovery.
   - The Engineer will provide written confirmation when the restriction is terminated.

Should a discovery occur, the FHWA will consult with the USHPO/THPO, and the Council in accordance with 36 CFR 800.13(b)(3) toward developing and implementing an appropriate treatment plan prior to resuming construction.

Revised 5/04

ENVIRONMENTAL STUDY

Project Name: UDOT Region 2 Wetland Mitigation Bank
Project No. SP-0201(11)13 PIN: 2977 Date: December 6, 2004
Job/Proj.: 78109 Prepared by: Lars Anderson
Address: 2010 South 2760 West Phone: 801-887-3470
Salt Lake City, Utah 84104

For guidance in preparing this environmental study, refer to Chapter 4 of the UDOT Environmental Process Manual of Instruction:
http://www.udot.utah.gov/esd/manuals/environmental/EnvironmentalManual.htm

REQUIRED SIGNATURES

I have reviewed the information presented in this Environmental Study and I hereby attest that the document is complete and the details of the document are correct.

_____ Date:
Reviewers Signature

FEDERAL AID PROJECTS

As a result of this Environmental Study, UDOT finds that this project will NOT cause significant environmental impacts and qualifies as a Categorical Exclusion Level II, under paragraph 21 _, according to the agreement between UDOT and FHWA for Environmental Approval Authority for selected Categorical Exclusion documents.

For CE Level II Projects:

Approved: _____ Date: 12/6/04
UDOT Region Environmental

For CE Level III Projects:

Review/Concur: _____ Date:
UDOT Region Environmental

For CE Level III Projects:

Approved: _____ Date:
FHWA, Utah Division

DM#8251

STATE FUNDED PROJECTS

As a result of this Environmental Study, UDOT finds that this project will NOT cause significant environmental impacts.

Approved: _____ Date:
UDOT Region Environmental

I. Purpose and Need for Action

This project will construct a wetland mitigation bank to provide wetland mitigation credits in advance of unavoidable impacts for UDOT projects. By creating wetland resources in advance of projects, UDOT is able to provide evidence of mitigation prior to impacts. This allows the U.S. Army Corps of Engineers to permit the project more effeciently and at a lower ratio than on a project by project basis.

II. Description

Provide a written description, including project length. Attach appropriate map(s) and typical section(s) showing proposed project.
This project will create 25 acres of wet meadow, emergent marsh, and riparian habitat in existing upland habitat. It will re-align Corner Canyon Creek and create a sustainable ecosystem conducive to wildlife and wetland vegetation. The proximity of the project to the Jordan River will enhance water quality of the Jordan River and improve the wildlife corridor along the River.

III. Roadway Function Classification

No	The facility is classified as a Major Rural Collector or higher. This is required to be eligible for federal funding.

IV. Public Hearing/Opportunity for Public Hearing

No	This project will add additional through traffic lanes or substantially change the layout or function of itself or connecting roadways, including access limitations.
No	This project has a substantial adverse impact on abutting property.
No	There are significant social, economic, environmental or other effects. (If YES, a Categorical Exclusion is not applicable.)
No	FHWA has determined that a public hearing is in the public interest.

If the answer to ANY of the above questions is YES, a public hearing or opportunity for a public hearing is required (attach documentation identifying date and location of hearing, summary of comments, and responses to substantial comments or include certification of opportunity for hearing).

What types of public involvement have been provided? Check the appropriate line(s) below: Attach a brief description of the event held, comments and responses to comments.

- ☐ Public Hearing in accordance with state and federal procedures
- ☐ Opportunity for Public Hearing Advertised
- ☐ Open House
- ☐ Neighborhood Meeting
- ☒ Agency Meeting
- ☐ Other:

V. Right-of-way

No Acquisition of right-of-way is required.

For projects that require right-of-way:

No The right-of-way required is significant because of its: size, location, use, or relationship to remaining property and abutting properties. If the right-of-way required is significant, the project **does not** qualify as a Categorical Exclusion.

No. of parcels affected

No. of acres required

VI. Cultural

Yes The project has the potential to cause effects on historic properties. If YES, continue below.

No The project meets the conditions of the MOU with SHPO for state-funded minor highway improvement projects. If YES, a memo is attached from the UDOT Region NEPA/NHPA Specialist granting cultural clearance No Cultural Coordination is complete. If NO, continue below.

☒ SHPO concurrence with the Determination of Eligibility and Finding of Effect is attached. Where applicable, Advisory Council concurrence and an executed Memorandum of Agreement are attached. Mitigation commitments are attached if applicable. (Note: All consultation must be submitted through UDOT).

Native American Consultation (required for every project that has the potential to cause effects on historic properties):

Yes Letters for Native American consultation have been sent and follow-up calls have been made. See attached letters and responses from tribes if applicable. If NO, provide an explanation

Yes Impacts to historic properties of concern to Native American Tribes require mitigation or avoidance.

For Projects That Have an Adverse Effect on Historic Properties:

☐ A formal public notice has been published in area newspapers.

VII. Paleontological

Yes The project may affect paleontological resources.

If YES, State Paleontologist concurrence with the Finding of Effect and the monitoring and/or mitigation measures are attached.

☐ If NO, either the project has no potential to affect the resource, or it meets the paleontological MOU conditions. A clearance memo from the UDOT Region NEPA/NHPA Specialist is attached.

VIII. Rare, Threatened or Endangered Species

☒ Concurrence letter from USFWS or the UDOT Wildlife Program Manager is attached. (Note: Letters should be less than 1 year old from date of issue or they need to be updated by issuing agency.)

IX. Wildlife

The following types of projects do not typically affect wildlife or habitat: installation of traffic signals, lighting, signs & pavement markings, rotomill & overlays, pavement rehabilitation, grinding & resurfacing, deck repair, installation of curb, gutter & sidewalk and minor intersection improvements

Yes Does the project have potential to affect wildlife, habitat, big game migration routes, fish passage or habitat connectivity?

Yes Does the project have potential to affect State Sensitive Species?

If either answer is yes, attach consultation letter from either the UDOT Wildlife Program Manager or the State Division of Wildlife Resources.

X. Invasive Species

If the project involves earthwork, grading or landscaping, there is potential to introduce or spread invasive weed species.

Yes This project has the potential to introduce or spread invasive species included on the noxious weed list of the State of Utah and the county noxious weed lists based on project location.

☐ If YES, Best Management Practices (BMP's) will be implemented to minimize the spread of invasive species. These BMP's are listed in the mitigation section and should be included in the project specifications.

XI. Noise

Projects that may affect noise levels to adjacent receptors include changes in roadway alignment, roadway widening and the addition of traffic lanes.

No This project has the potential to increase noise to adjacent receptors. If YES, a noise study is attached.

XII. Water Pollution, Wetlands, Floodplains, Stream Encroachments

Yes This project MAY affect wetlands, floodplains, water quality, or may encroach on a natural stream channel.

If YES, coordinate with UDOT Region Hydraulics Engineer and Region Wetland Specialist. Attach appropriate mitigation commitments and permit requirements.

XIII. Hazardous Waste

No A visual inspection of the project area found substances that may be hazardous to human health and/or the environment.

Yes This project involves excavation beyond or below the existing roadway footprint.

If YES is checked on either line:
Site investigations and coordination with DEQ may be necessary.
Mitigation commitments are attached if applicable.

XIV. Prime, Unique, Statewide, or Local Important Farmland

Projects in areas whose land use maps indicate no current or future farming activities, would not usually affect farmlands.

No This project MAY affect Prime, Unique, Statewide, or Local Important Farmlands.

If YES, the Natural Resource Conservation Service letter and Form AD1006 are attached. (Note: Letters should be less than 1 year old from date of issue or they need to be updated by issuing agency.)

XV. Air Quality

No The project adds or alters roadway capacity or will result in increased traffic volumes (addition of through traffic lanes or intersection/signal improvements.

If YES, attach the "Air Quality Supplement".

Air Quality Construction Impacts:

No The project has the potential to increase particulate matter due to construction activities. If YES, Best Management Practices to minimize fugitive dust will be incorporated on the project in accordance with DAQ (Division of Air Quality) procedures.

XVI. Relocations

No There MAY be relocations of residences or businesses as a result of this project. If YES, explanatory material is attached.

XVII. Land Use / Urban Policy

No This project MAY affect land use or urban policy. If YES, explanatory material is attached.

XVIII. Section 4(f) or Section 6(f) Properties - For Federal Aid Projects Only

No There is Section 4(f) or 6(f) involvement.

☐ A Programmatic Section 4(f) Evaluation is included.

☐ An Individual Section 4(f) Evaluation is attached. If 6(f) properties are involved, they will be addressed in the Section 4(f) Evaluation.

XIX. Other Environmental Factors Considered

This project, except as noted and explained in attachments, will have no disproportionate, serious or lasting effect on the following:

☒ Visual
☒ Social/Economic
☒ Title VI and/or Environmental Justice
☒ Natural Resources
☒ Construction
☒ Energy
☒ Geology/Soils

☒ Wild/Scenic Rivers
☒ Ecology

XX. Mitigation

Yes Mitigation commitments are required. If YES, a list of all commitments is attached.

XXI. Conclusion

No The project may have substantial controversy or significant impacts. If YES, a Categorical Exclusion is not applicable.

Comment Response Matrix

Document Title	UDOT Wetland Mitigation Banking Instrument	**Preparer**	Lars Anderson	**Date**	2-Mar-05
Document Date		**Organization**	UDOT		
Commenter	See Sections				

Item	Commenter		Comment	How Addressed	New Page	QC/ Concurrence
1	Betsy Hermann		The high TDS of the water from the geothermal well is a big issue, particularly in light of the Corner Canyon Creek water being fairly high itself (so not much dilution). No discussion of the TDS is in the document. We're concerned about flood irrigation of highly saline water over this area, month after month, year after year. A salty hardpan will not make a good wetland. The salt tolerances of the current vegetation and proposed vegetation should be discussed. What if the soil becomes more saline? Will there be a die-off? Will we end up with a salt marsh? That wouldn't be very good mitigation for fresh water riverine wetlands. We recommend that UDOT research this possibility, and suggest consulting NRCS personnel in the Salinity Control program, in addition to possibly Utah DEQ and/or Utah DWQ to get a more thorough analysis included in the document for possible effects and perhaps some strategies to minimize the impact of highly saline water on the soils and vegetation.	Discussion concerning TDS has been added to the document. Monitoring guidelines have been included also.	12-13	

Comment Response Matrix

Document Title	UDOT Wetland Mitigation Banking Instrument	**Preparer**	Lars Anderson	**Date**	2-Mar-05
Document Date		**Organization**	UDOT		
Commenter	See Sections				

Item	Commenter		Comment	How Addressed	New Page	QC/ Concurrence
2	Betsy Hermann		Chapter 1, page i – The specific names of the MBRT members could change. The document should probably be more general, only listing the agencies involved, so that if turnover occurs the information won't be out-of-date. (For example, Dennis Blinkhorn is no longer with the Corps.) This also occurs on page 2 (4th paragraph) where Barry Tripp is mentioned, and on page 13 (bottom of page), where Lars is named. These should probably just be specified by the person's position and agency. EPA should be included on the MBRT team.	All MBRT members have been added. Where it is not necessary to list the person responsible, it has been deleted. Otherwise the responsible party remains listed to ensure compliance with requirements.	Title	
3	Betsy Hermann		Ch. 1, Section 2.0, page 2 – There should be more discussion on the mechanics of how and where the water from the geothermal well will be cooled. My understanding was that it would happen mostly in the Galena Canal – is this correct? The document only says "the wetlands will accept the excess water from the Prison at 100 degrees..." What temperature is the water anticipated to be when it leaves the canal and enters the emergent marsh portion of the wetlands? What are potential effects of high temperature – is this anticipated to be an issue? Why or why not? This needs more discussion.	A more detailed discussion has been added.	12-13	

Comment Response Matrix

Document Title	UDOT Wetland Mitigation Banking Instrument	**Preparer**	Lars Anderson	**Date**	2-Mar-05
Document Date		**Organization**	UDOT		
Commenter	See Sections				

Item	Commenter		Comment	How Addressed	New Page	QC/ Concurrence
4	Betsy Hermann		Ch.1, Section 4.0, page 3 – What do you mean by "Only 25 acres will be used *initially*..." (1st paragraph). Is there more potentially planned for the future? If so, this possibility should be raised in the document. If not, "initially" should be removed. More discussion is needed to clarify the acreages that already are wetland (5.5), the acreages of wetland that will be created (14.3 + 6.0 + 1.3 + 3.75 = 25.35). See comment #9 for more on this.	The document has been clarified to read 25.35 acres. The bank could be expanded in the future, but there are no plans for that now. We do not want to preclude that option. This has been clarified in the document to read that the remaining acreage will be held in a conservation easement.	4	
5	Betsy Hermann		Ch. 1, Section 4.0, page 3 – The document states in the "Open Water / Stream Channel" section: "In the spring, when run-off is high, the Galena Canal will be fill (sic) quickly and a higher volume of water will enter the wetland." I understood that the geothermal spring would be supplying the Galena Canal with water, and that the spring has a relatively constant flow. The spring runoff should therefore only affect the portion of the mitigation site supplied by Corner Canyon Creek.	In addition to Corner Canyon Creek there are small tributaries that feed into the Galena Canal. In the spring-time these will supplement the water in the Canal.	5	
6	Betsy Hermann		Ch. 1, Section 5.0, page 4 – What is the flow regime of Corner Canyon Creek? This will affect how the water supply fluctuates through the year, and would also affect how TDS and water temperature fluctuates through the year, at least for the wetlands on the northern part of the property that receive a combination of geothermal well and creek water.	Based on new information from the Dept. of Corrections, water from Corner Canyon Creek is no longer necessary for the southern portion of the wetland. Approximately 1/3 of the water from Corner Canyon Creek will be diverted to the Northern wetland. No geothermal water will be used in the Northern wetland.	6	

Comment Response Matrix

Document Title	UDOT Wetland Mitigation Banking Instrument	**Preparer**	Lars Anderson	**Date**	2-Mar-05
Document Date		**Organization**	UDOT		
Commenter	See Sections				

Item	Commenter		Comment	How Addressed	New Page	QC/ Concurrence
7	Betsy Hermann		Ch. 1, Section 5.0, page 7 – 1st paragraph, *Mulenbergia asperifolia* is misspelled. 2nd paragraph, the species listed are *all* weedy except for *C. nauseosus*.	The misspelling has been corrected. The species are listed as existing on-site. Not to be interpreted as a list to be used for revegetation.	8	
8	Betsy Hermann		Ch. 1, Section 5.0, pages 8-10 – Which of these noxious or invasive weeds currently exist on the 252 acres? A few additions should be made to the list of "Additional Invasive Species": Common Teasel (*Dispicus fullonum*), Dalmation toadflax (*Linaria genistifolia* ssp. *dalmatica*), yellow toadflax (*Dispicus fullonum*). Also, some other ones to watch for are: reed canary grass (*Phalaris*), cheatgrass) (*Bromus tectorum*), bur buttercup (*Ceratocephalus testiculata*), smooth brome (*Bromus inermis*), common reed (*Phragmites)*. These may not all be appropriate or possible to eliminate, but they are potential invasive weed problems. Russian olive is listed and currently exists on the property but, as I understand it, won't be controlled outside of the actual wetland mitigation area. Some more discussion as to where the listed weeds will be controlled and where they won't would be helpful here. Weeds that have wind-dispersed seeds will be problematic if they occur elsewhere on the 252 acres, but are only controlled on the 25-acre mitigation area.	A new discussion concerning listed noxious and invasive species has been included. UDOT cannot take on the burden of weed control for the entire 252-acre parcel. It is simply impractical. Weed control will include Russian Olive in the mitigation area, but not throughout the site. Budgetary constraints make this impossible at this time.	10-12	

Comment Response Matrix

Document Title	UDOT Wetland Mitigation Banking Instrument	**Preparer**	Lars Anderson	**Date**	2-Mar-05
Document Date		**Organization**	UDOT		
Commenter	See Sections				

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9	Betsy Hermann		Ch. 1, Section 7.0, page 11 – Page 3-4 indicates that 25.35 acres of wetlands will be created (14.3 wet meadow + 6.0 emergent marsh + 1.3 open water + 3.75 riparian/upland = 25.35). However, on page 11, the document states that 27 acres will be created, resulting in a 27-acre credit. Page 15, however, (Section 12.0 Compensation Ratios) does state that 25.35 acres of wetland plant communities will be created. The explanation is made a bit more confusing by the fact that 5.5 acres of wetlands already exist, and that 2.7 will be impacted during construction, and then incorporated into the created wetlands. As I understand it, this would create a block of wetlands 28.15 acres in size (5.5 acres existing wetland + 25.35 created wetland – 2.7 acres of impacted-then-incorporated wetland). Is this correct? It's confusing, and needs more explanation.	This inconsistency has been corrected in the document. UDOT seeks credit for 25.35 acres of created wetland. Approximately 2.7 acres of the existing 5.5 acres of wetlands will be temporarily impacted while the site is constructed. UDOT does not seek credit for improving these wetlands because it would be too difficult to quantify the improvement. Instead these will be in addition to the 25.35 acres of wetlands, but no credit will be given for the improvement.	15	
10	Betsy Hermann		Ch. 1, Section 7.0, page 11 and 13 – The ledger that tracks the credits and debits to the bank should also be forwarded to each MBRT member agency. Regarding the example ledger shown in Figure 9: How will multiple projects be documented? It looks like only 1 project can be listed.	A new ledger has been included in the document.		
11	Betsy Hermann		Ch. 1, Section 9.0, page 13 – Change the wording to: "The monitoring period will last for a minimum five years *or until success criteria are met*, during which time..."	The document has been revised to include this.	17	

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12	Betsy Hermann		Ch. 1, Section 9.0, page 14 – Invasive weeds are going to be an ongoing struggle at the property, and should receive some emphasis under the monitoring procedures listed in this section, probably in the "Monitoring Report" section.	The document has been revised to reflect this change.	10-11	
13	Betsy Hermann		Ch. 1, Section 10.0, page 15 – In the event the Bank fails to achieve the Success Criteria, the debiting of credits should immediately cease. It doesn't make sense to continue debiting a wetland bank that is not functioning properly. The statement about the 180-day limit is a bit confusing: 180 days from what? From the date that the remediation plan is submitted? This should be clarified.	The additional time frame to bring the bank into compliance is a standard practice for mitigation banks around the country. This allows for implementation of measures to remedy the non-compliance. The time frame has been reduced to 90 days, although this is half the time normally allotted to wetland banks to come into compliance. Stopping the debiting of credits immediately would be too disruptive to the permitting process. The Chair of the MBRT can force UDOT to pay an in-lieu-fee if corrections are not made within 1 year of notification.	18	
14	Doug Sakaguchi		The introduction to the banking instrument mentions a water budget for the mitigation site (page 1, 2nd paragraph), but no budget is shown in the document. How long water will be held in the wetland to cool the thermal water? Is the size of the created wetland sufficient for cooling the amount of geothermal water to be discharged from or held in the wetland? Is the Corner Canyon Creek water of sufficient quantity and quality to dilute and cool the geothermal water? Is data available for the Corner Canyon Creek and geothermal well water to verify that these water sources will maintain the desired water quality of the mitigation wetlands? Are the water rights available to UDOT for using the water in this manner?	The document has been modified to answer these questions.	12	

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15	Doug Sakaguchi		Section 5: There are several typographical errors in the spelling of several common and scientific plant names: Page 8 (Cirsioum should be spelled Cirsium); Page 9 (species name for squarrose knapweed is virgata, variation name is squarrosa; Solanumk should be Solanum); and Page 10 (Houndstongue is misspelled; loosestrife should be salicaria). Do the "Additional Invasive Species" (page 9-10) represent plants already on the property? Or do they represent potential problems for this site. Other potential invasive species which have a high chance of colonizing the site include Phragmites sp. and dalmatian and/or yellow toadflax.	These changes have been made in the document	10-12	
16	Doug Sakaguchi		Section 9: (Page 13) The monitoring period should be at least five years. If vegetation criteria has not successfully been achieved by five years, then monitoring should continue beyond the minimum five years. (Page 14) The wetland Monitoring Plan should specify what acceptable survey method will be used or adapted for evaluating the degree of success of vegetation establishment.	This corrections has been added to the document	17	
17	David Ruiter		The desired vegetation lists for the wetland classes (pg 3) need to be completed so the MBRT can concur on the species composition and densities to be used for the success criteria.	The vegetation lists have been completed.	4-5	
17	David Ruiter		Sentence below Fig. 7 has typo.	Typo has been corrected.	14	

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18	David Ruiter		I do not see any justification to support allowing 25% of the credits to be available on approval of mitigation banking instrument. The intent of mitigation banks is to have the $ in the bank before $ are removed. While there may be occasions where a MBRT authorizes pre-mitigation success credits for some special reason, that should not be considered the norm. One of the major reasons that the agencies believe banks are appropriate is the banks ability to assure the mitigation is in place before the impact occurs.	This topic has been discussed thoroughly with the MBRT. The conclusion is to have 20% of the credit available upon approval of the Final Mitigation Banking Instrument. This has been shown to be standard operating procedure throughout the Sacramento District of the Corps of Engineers.	15	
19	David Ruiter		The monitoring will have to continue for the life of the bank to assure that the bank is maintained in perpetuity. Yearly monitoring will be necessary until all the wetlands reach the success criteria, or all the credits are debited, which ever is later. Once the bank is closed then a long term, but less frequent, program can be implemented. A valid quantitative vegetation sampling method needs to be included for the % cover calculations.	The monitoring as described in the Reporting Protocols and Monitoring Plan will continue for five years or until success criteria are met. To require intense monitoring after success criteria are met would be excessive. Annual photo monitoring will continue until the bank is closed. The ground cover estimates will be made using a 1-meter square frame following the Daubenmire ground cover estimation technique.	18	

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20	David Ruiter		The 50% of original plant species criteria is too low. If there is a decision that multiple species (e.g. 6-8 species) are necessary to create the plant diversity suitable for a specific wetland type than that diversity needs to be maintained, not 50% of the desired condition.	This success criteria is a standard practice for mitigation sites throughout Utah. It is impractical to expect greater than 50% success of the planted species to compete with invasive species, volunteer species, etc. (Although we all hope for a higher percentage)	18	
21	David Ruiter		There need to be methods presented to measure wetland hydrology (e.g. wells)	Piezometers have been added to the monitoring requirements	18	
22	David Ruiter		I am not sure I like the in-lieu fee approach to bank failure. This moves the burden of success from UDOT to some unknown entity. It would be more appropriate if there was a determination of noncompliance with permit conditions and implementation of a compliance plan at the site, or another appropriate site in the service area, be required until success is established.	The in-lieu-fee is a last resort. The majority of the MBRT felt this was fair because it created a “catch all” safety mechanism in the event of non-compliance.	19	
23	David Ruiter		The 1:1 mitigation ratio is only applicable when the mitigation is successfully in place before the impact occurs. That is how a bank should work and 1:1 is appropriate for that condition.	The 1:1 mitigation ratio will remain in the document.	20	

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24	David Ruiter		The closure criteria should include approval of the MBRT. A Bank is only "closed" when there are no more credits available, or the Banker decides to not "transfer" the remaining credits. The final decision to close the bank is not made by the sponsor but rather the MBRT after the MBRT decides the banks has met its intent, or perhaps the bank has failed and suitable arrangements have been made to allow closure. As mentioned above, there will need to be long term monitoring and maintenance by FFSL to ensure the bank remains in proper condition.	A provision has been added to the document to allow the MBRT the final decision for bank closure.	20	
25	David Ruiter		There needs to be sufficient language/documentation in the instrument to assure that the water rights necessary to maintain the bank in perpetuity are in place prior to bank authorization.	The agreement between the agencies has been added in the Agency Correspondence Section 3.	Section 3	
26	David Ruiter		The USFWS has mentioned that there are water quality concerns with the proposed water source (e.g. high TDS). While the instrument does not need to have a water quality analysis included, there needs to be some type of documentation to assure the source water quality is adequate to maintain a healthy wetland in perpetuity. At a minimum water entering the wetlands must meet all water quality standards. If such water quality is shown to be unable to maintain the expected plant communities then it will need to be improved via some other method. The bank wetlands cannot be used to treat the inflow. The bank needs to be treated as water of the US.	Discussion concerning water quality has been added.	12-13	

INTERAGENCY AGREEMENT BETWEEN THE DEPARTMENT OF TRANSPORTATION DEPARTMENT OF CORRECTIONS & DEPARTMENT OF NATURAL RESOURCES CONCERNING WETLANDS MITIGATION

The Utah Department of Transportation (UDOT), the Utah Department of Corrections (Corrections), and the Utah Division of Forestry, Fire and State Lands, of the Department of Natural Resources (FFSL), enter into this Agreement for the development of wetlands on land owned and managed by FFSL and identified in Utah Code Ann. § 63A-5-222.

WHEREAS, the Legislature, through Utah Code Ann. §63A-5-222, has identified a parcel of land approximately 250 acres on the east edge of the Jordan River between about 12300 South and 14600 South in Salt Lake County and designated it as "Critical Land." FFSL owns and manages this land. And, it is the desire of FFSL to manage this land and preserve it or restore it to a predominantly natural, open and undeveloped condition and wetlands as required by the above statute and believes this Agreement between itself, Corrections, and UDOT can help it achieve its goals, and

WHEREAS, Corrections has water rights to underground geothermal wells that provide hot water and heat to the prison. Excess and used water from this source is diverted to a cooling pond on the critical land owned by FFSL, where it cools before being diverted to the Jordan River. And, Corrections desires to enter into this agreement in a cooperative effort to help FFSL in its responsibilities with the land, to help UDOT in creating a wetlands bank for future use, and to provide a place for the water to cool

before it enters the Jordan river in compliance with all State and Federal regulations and laws for such discharge of waters, and

WHEREAS, UDOT has an obligation under federal law to manage, restore, or create wetlands in exchange for developing certain transportation facilities. Wetlands mitigation banks are a method of storing wetlands until they are needed to trade for other wetlands that may be destroyed by a development. And, UDOT desires an opportunity to utilize the Critical Land identified in this agreement for the purposes of creating a wetland mitigation bank. And by so doing it will provide support and critical funding and work to help FFSL in its mission while providing Corrections with a method to cool and utilize its water before its discharge into the Jordan River, and

WHEREAS, UDOT wishes to use Corrections's excess and used thermal water, once it is cooled to an acceptable temperature, to develop wetlands in the Critical Lands for purposes of creating a mitigation bank.

THEREFORE, The parties to this Agreement agree that the creation and management of a portion of these lands as wetlands serves the purposes of each party and each desires to cooperate with each other as provided in this Agreement, as follows:

1. FFSL agrees to allow Corrections to discharge and cool its geothermal and other waters on said land at a site referred to as the "cooling pond"; the land to be used for this purpose is identified in Exhibit A (Cooling Pond Site). In return for its agreement with Corrections to allow the discharge of geothermal water, Corrections will allow UDOT to use said waters for the creation of wetlands on the critical lands.

2. FFSL also agrees to allow UDOT to create wetlands as described in this document and utilize and channel said geothermal water from the noted cooling pond to

said wetlands as provided in this agreement. As part of this authorization, UDOT may reopen the canal channel to take water from the cooling pond to the Wetland Mitigation Site . The land to be used for this purpose is identified in Exhibit B (Wetland Mitigation Site). These allowances are made for the commitments made herein by Corrections and UDOT.

3. Corrections agrees to allow UDOT to use its excess and used thermal water to create a mitigation bank in the Critical Lands in the amount of at least one cubic foot per second.

4. Corrections further agrees that the thermal water entering the cooling pond will have no contaminants other than what is naturally found in the water with no additions from storm water drains or other illicit dumping.

5. In exchange for FFSL and Corrections entering into this Agreement, UDOT will design, construct and maintain at its own expense without financial obligation of either FFSL or Corrections, unless agreed to specifically in a separate agreement, that area noted on Exhibit B as the Wetland Mitigation Site for the period of 25 years.

6. Before undertaking any construction or making any physical changes to the canal or the Critical Site, UDOT agrees to consult with and get approval from FFSL. Any disagreement to the plans will be resolved before any construction begins. UDOT agrees that it does not have authority to independently affect any other portion of the land owned by FFSL and can only do so with specific approval of FFSL.

7. FFSL agrees to allow UDOT unrestricted access, on roads and access corridors as agreed upon by the parties as necessary, to the identified parcel an

unrestricted access at the parcel itself, for design, construction, and maintenance of the Wetland Mitigation Site.

8. Corrections has the right to use and divert two (2) cubic feet per second (cfs) of water from the East Jordan Canal Company, and Corrections agrees to let UDOT use this water for wetlands mitigation from April 1 through October 1 of each year, or as this resource becomes available. This water cannot be otherwise diverted. This water may be temporarily discontinued or diverted, however, for a period of time not to exceed 7 days for the repair and/or upgrade to the pipelines associated with the delivery of this water to the wetland mitigation site. All water rights associated with this agreement will remain the property of Corrections, except as otherwise addressed by this agreement, and all diversion and use rights will restore to Corrections upon the completion or termination of this agreement, except as otherwise addressed by this agreement.

9. Corrections agrees that if the Draper prison site is relocated and Corrections no longer controls and/or occupies said property or assets, that it will transfer water and diversion rights equal to 2 cfs flow from the East Jordan Canal Company, and transfer water and pumping rights for the geo-thermal well to UDOT or their agents for the purpose of maintaining the wetlands mitigation site.

10. Corrections Agrees to accept responsibility for the water pipe up to its property line, and agrees to maintain a minimum 1 cubic foot per second of flow to the cooling pond year-round. Corrections will be held harmless, however, if the geo-thermal resource fails to supply water to be pumped, or the supplying aquifer is lost due to seismic activity or any other act of God beyond the control of Corrections.

11. Corrections agrees to be responsible for water quality testing at its facility before discharge into the pipe. UDOT agrees to be responsible for water quality testing at the mitigation site prior to discharge into the Jordan River.

12. UDOT is responsible for water quality testing at the mitigation site prior to discharge into the Jordan River. This will be in accordance with all Federal and State Laws and regulations.

13. UDOT accepts responsibility for the thermal water that enters the Wetland Mitigation Site when it crosses the property boundary. UDOT will also maintain the vegetation and hydrology of the Wetlands Mitigation Site for the term of this Agreement.

14. All parties agree that FFSL is responsible for access control and that UDOT is responsible only for vegetation and hydrology of the Wetlands Mitigation Site.

15. UDOT will keep the Wetlands Mitigation Site in compliance with all federal regulations regarding wetlands mitigation banks.

16. The parties to this agreement have liability coverage through the Utah Risk Management Fund and are governmental entities pursuant to the Governmental Immunity Act, chapter 30, title 63, Utah Code Annotated. Nothing in this agreement limits, restricts or waives any of the Governmental Immunity Act provisions. Each party agrees that it is responsible for incidents arising on the land that it controls and that the State Division of Risk Management may allocate any increases in premiums resulting from an incident on those lands according to ownership and/or culpability as determined by Risk Management. If an incident occurs on land that is controlled jointly or a joint activity on any part of the land, the parties agree to share equally in any increased premiums.

17. Nothing herein is intended to confer rights of any kind in any third party.

18. For the convenience of the parties, and in order to speed execution, this Agreement may be executed in counterpart originals, provided that each is identical, each of which shall be deemed to be an original, but which taken together shall constitute one and the same instrument. The original signature page or pages from any one or more counterpart originals may be removed from that counterpart original and attached to a master original, so that original signature pages are all attached to the same master original. The parties each intend to sign three original copies of the Agreement in order to create three master originals, one for each party.

19. This Agreement shall expire 25 years from its execution.

20. In the event of a default by a party to this Agreement in the performance of its obligation, the non-defaulting party shall give written notice to the other designating such asserted default. The defaulting party shall have a period of thirty (30) days following the effective date of said notice within which to correct the default. In the event that the defaulting party shall fail to correct such default within said thirty (30) day period, the non-defaulting party shall have the right to any of the following remedies, except as otherwise exempted in this Agreement.

(a) Specific Performance. To compel specific performance (by legal action) by the defaulting party of its obligations hereunder; or

(b) Damages. To recover damages from the defaulting party resulting from said default or to pursue any other remedy available under the laws of the State of Utah.

21. If any provisions or portions of this Agreement shall, to any extent, be held invalid or unenforceable, the remainder of this Agreement or the application of such provisions or portions shall not be affected and each provision of the Agreement shall be

valid and enforceable to the fullest extent permitted by the law, so long as the intent of the Parties can be maintained.

22. No action taken by either party shall be considered as constituting waiver of compliance by such party with any representation, warranty, or covenant contained in this Agreement. Any waiver by any party of a breach of any provision of this Agreement will not operate or be construed as a waiver by such party of any subsequent breach.

23. Each of the parties to this Agreement expressly acknowledge that it may suffer irreparable injury and damage if any other party breaches its covenants or fails to comply with the provisions set forth in this Agreement for which money damages will not provide an adequate remedy. Therefore, the parties each agree that if a party breaches any provision set forth in this Agreement, any other party shall be entitled, in addition to such other remedies and damages as may be available to it, to an injunction requiring specific performance of such provision or restraining the breaching party from acting in violation of such provision, as the case may be, to the fullest extent permitted by law.

24. All notices, requests, consents, and demands shall be given to or made upon the parties at their respective addresses set forth below, or at such other address as a party may designate in writing delivered to the other parties. Unless otherwise agreed in this Agreement, all notices, requests, consents, and demands shall be given or made by personal delivery, by confirmed air courier, by facsimile transmission (with a copy to follow by first-class mail), or by certified first-class mail, return receipt requested, postage prepaid, to the party at the address listed below. If sent by confirmed air courier, such notice shall be considered given upon the earlier to occur of the date upon which it

is usually received by the address or the business day upon which delivery is made at such address as confirmed by the air courier (or if the date or such confirmed delivery is not a business day, the next succeeding business day). If mailed, such notice shall be considered given upon the earlier to occur of the date upon which it is actually received by the addressee or the second business day following the date upon which it is deposited in a first-class postage-prepaid envelope in the United States Mail addressed as listed below. If the individuals noted below are no longer with the various departments and divisions, notice shall be given to the Executive Director of the various agencies. If given by fax, such notice shall be considered given upon the date it is actually received by the addressee:

If to UDOT:

Region 2 Environmental Manager
2010 South 2760 West
Salt Lake City, Utah 84104

If to Corrections:

Executive Director
14717 South Minuteman Drive
Draper, Utah 84020

If to the FFSL:

Division Director
1594 West North Temple, Suite 3520
Salt Lake City, Utah 84114-3520

25. While the Division of Facilities Construction and Management of the Department of Administrative Services (DFCM) is not a party to this Agreement, there has arisen a question as to ownership of Corrections' water rights as described herein. Therefore, for the specific and sole purpose of resolving that issue for this Agreement

only, DFCM, by the signature of its director attached hereto, agrees and stipulates that if the Draper prison site is relocated and Corrections no longer controls and/or occupies said property or assets, Corrections may transfer water and diversion rights equal to 2 cfs flow from the East Jordan Canal Company, and transfer water and pumping rights for the geo-thermal well to UDOT or their agents for the purpose of maintaining the wetlands mitigation site. DFCM waives any right to these rights or if it does have rights in said water, it joins in stipulating to the transfer of said water rights under the narrow limitations of this Agreement.

26. The Governor's office has been informed of this project, has reviewed this proposal, and has given its approval for implementation.

27. This Agreement becomes effective when all parties have signed.

UTAH DPT. OF TRANSPORTATION

RANDALL PARK
Region 2 Director

5/3/05
Date

FORESTRY, FIRE & STATE LANDS

A. JOEL FRANDSEN
Division Director

May 2, 2005
Date

UTAH DPT. OF CORRECTIONS:

SCOTT V. CARVER
Executive Director

5-10-05
Date

FACILITIES CONSTRUCTION & MGT

KEITH STEPAN
Division Director

May 5, 05
Date